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SOAP and SANITARY CHEMICALS

CONTENTS

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AS THE EDITOR SEES IT

IF RECENT reports may be taken at face value, the feeling in the soap industry that fat and oil quotas should and will be increased for the second quarter of 1946 may be transcribed into fact. The soap industry some time ago laid its case before the Department of Agriculture in its quest for more fats and oils for civilian soap manufacture. The hope that the request would be granted seems to be bolstered by recent news supposedly emanating from the USDA. At any rate, the average guess among soapers is that quotas will be raised to 80 and 90 per cent respectively for household and industrial soaps. And if no increase is forthcoming, it is quite obvious that the disappointment in the soap industry will be keen.

WHETHER soap fats and oils will remain short through the latter half of 1946 or will become sufficiently plentiful—perhaps to permit revocation of WFO-42b before the year end — hinges on the supply of Philippine copra which comes forward to the U. S. In fact, Philippine coconut oil is the nub of the entire fat and oil situation as far as the American soap kettle is concerned, according to the Bureau of Agricultural Economics, USDA. Coconut oil which came to the United States from Ceylon and other Pacific Islands in 1944 and 1945 will revert to England and the Continent where it was shipped in pre-war days. The dependence of the American soap kettle for more oil and for its sole coconut oil supply in 1946 and thereafter must of necessity rest on the Philippines,—and that must exceed the 200,000,000 pounds imported annually in 1944-45 from Ceylon, et al.

If the 200 odd small vessels which are being assigned by the Navy for inter-island shipping in the Philippines begin their operations promptly, and the copra is available among the remote islands, an enlarged flow to the mills may soon be in evidence. But the price to the gatherer and to the shipper must be sufficient to encourage steady collection and shipment. Otherwise, the journeys of the many inter-island vessels may soon be in vain. A living wage must come to him who produces and ships the copra,—and in the face of current Philippine inflation. From such evidence as has come forward so far, this is not now the case. And it would seem to be the immediate problem to attack if the flow of copra and the supply of coconut oil for the soap kettle are to be increased to a point where the latter will be of sufficient aid to relieve the present shortage of soap fats.

IN SPITE of the fact that most European countries are reported "starving to death" as far as soap supplies are concerned, recent inquiries for export shipments of soap which have come to the American market from abroad reveal that some folks in Europe are very fussy about the kind of soap which they buy. Two instances which have arisen lately are enlightening. One inquiry for a few million pounds of laundry soap from the Continent called for a pink floating soap. Ordinary yellow American laundry soap would not do. In another instance, the inquiry for bar laundry soap insisted on a 70 per cent fatty acid content and no rosin or fillers,—a standard of quality which is hardly avail-

able to the American consumer under present conditions.

That these inquiries from the Continent should annoy soapers here is natural. But the orders are being filled because they represent ex-quota business which some soapers are anxious to obtain. At the same time, they consider these demands for the best under current conditions as a display of what is labeled typical European gall. That the requirements as indicated should add a greater drain on our short fat and oil supplies does not seem to matter. They insist upon the best,—probably not knowing, or caring, that instances of this type bulk large in building ill-feeling in the mind of Americans. That such might, and should, eventually influence the issuance of export permits is quite apparent.

EQUIPMENT in most soap plants has taken a bad beating during the past three or four years. Most small plants and some larger ones have been permitted to run down because there has been little else which their owners could do about it. In the majority of instances, the equipment has been in such constant use that time for repairs and replacements, except in the case of actual breakdowns, simply could not be afforded. As a consequence, it is no surprise that engineers upon being called in are finding the efficiency of many a plant at low ebb and accounting for increasing production deficiencies.

In the hurly-burly of the past few years,—in the rush to get out production with as little sacrifice in quality as possible,—equipment and plant design faults have emphasized their presence. Weaknesses in the production line have stood out under the pressure of increased output. Certain hand operations which were merely inconvenient in the easier-going days of 1938 have become conspicuous as bottle-necks.

If the heavier production requirement of recent years has done nothing else for some soapers, it has convinced them that their plants are out-dated and inefficient,—that their "nice little soap factory" may indeed not be what they believe it to be,—that consigning some of their antequated equipment to the junk pile as soon as possible would be genuine economy. Readiness for the competitive rumpus which is certain to return to the soap industry when the present "honeymoon" is over cannot include warworn and junky equipment or bad plant bottle-necks,—not if the soaper wants to stay in the fight.

NOT so long ago, seven restaurant owners in New York were given stiff fines and summonses were issued to 87 others because their "clean" glasses were found to be dirty upon inspection by health authorities. From the same restaurant trade publication where this information was gleaned comes the statement that subsequent inspection of many quick lunch counters, soda fountains, bars, and even restaurants in the better class hotels showed a high bacteria count on "clean" dishes and other utensils. Organisms dangerous to health, as well as harmless bacteria, were encountered.

In spite of widespread precautions exercised in preventing the spread of disease, some authorities have always felt that present dish washing methods in most public eating places represent a gap in our sanitary armor. While there are those who favor mandatory use of germicidal detergents or rinses, other health officials have consistently opposed such laws as basically impractical and unenforceable. But in spite of the disagreement among the authorities, we feel that this widespread "germs on clean dishes" publicity is an encouragement to wider use of germicidal detergents or rinses which calls for wider sales and advertising activity. Industry can still sell the idea more widely in spite of the lethargy or opposition of some health officials.

STAIN REMOVERS

DURING these days of scarcities, stains and spots on clothing or household textiles are problems more serious than usual. In the "old" days, before the war, people had acquired the habit of depending on the commercial dry cleaners and laundries, with their expert "spotters," to remove these unsightly blemishes. When wartime shortages limited these fimiliar services, many people turned to home methods for removing stains. Today, households are few that do not have available a bottle or can of cleaning fluid.

More than ever, it has come to be appreciated that the removal of stains and spots is a necessary feature of the general care of clothing and household textiles. Aside from purely esthetic considerations with regard to appearance, economic factors dictate that stains be removed promptly with appropriate materials. Authorities (1,2) in the field stress that prompt treatment is one of the most important requisites of stain removal. This is essential, not only because many stains become so hard and fixed as to make removal difficult or impossible, but also because if left long enough, practically all stains have an injurious effect on fabrics. In studies of sixty-five different kinds of stains, Oesterling and McFadien (3) demonstrated that, without exception, all the stains investigated reduced the strength of the fabric under at least one of the test conditions.

With these observations as a background, it is quite understandable why there should be a large and growing market for efficient stain removers. By the same token, it is also apparent that those desiring to manufacture and market such products must have at least a working knowledge of the factors involved. Many an article has been ruined by the use of improper stain removers or the failure to heed simple precautions. In this connection, much can be learned from the experiences of commercial dry cleaners and launderers, and especially from the professional spotter whose job it is to remove unsightly stains without damage to the fabrics.

It is well appreciated that determining the nature of a stain is an important requisite in selecting the reagent most suitable for its removal. Of kindred importance is a knowledge of the effect of the remover on the fiber itself. Hence it is often advisable first to test the reagent on a small inconspicuous part of the fabric. Howver, it is not the purpose of this discussion to go into any detailed consideration of the several reagents recommended for treating specific stains because these have been covered quite adequately in a number of sources. (1,2,4,5,6). Rather it is the intention here to consider the broader, "general purpose" stain removers such as are provided for the public and, to some extent, for professionals.

Nonetheless, it is of definite interest that attempts have been made (with varying degrees of success) to market stain remover kits containing basic reagents required for treating a variety of spots and discolorations. Such a kit would require at least three kinds of cleaning agents. This would include grease solvents like carbon tetrachloride, benzene or gasoline; absorbents such as chalk, corn meal, talcum or cornstarch; and bleaches like Javelle water, sodium perborate or hydrogen peroxide. A more elaborate kit might also include a suitable soap preparation or related product and a bottle of glycerine, this last being useful not only for treating specific stains, but also for loosening and softening other stains. Other recommended inclusions would consist of cloth, white blotting paper or cleansing tissues, a medicine dropper and a glass rod. A concise manual, in the form of a booklet or chart, is essential to provide pertinent information on the use of the contents of the kit.

It might as well be stressed at this point that there is no such thing as a universal stain remover. However, there are several kinds of general stain removers for use where the cause of the discoloration is not known or, what is perhaps more pertinent, for application where more specific methods are not available. Thus, Crowley (7) lists the following preparation as useful for removing many stains from textile materials:

	Parts
Ammonium persulfate	1.0
Ammonium chloride	0.5
Water	20.0

He cautions that, before applying this or any other stain remover to a valuable article, it be tested on a scrap of the material or an inconspicuous portion in order to determine its effects on the dyes.

Two other general stain removers are described in another authoritative source. (8) For removing stains of unknown origin, it is recommended that the following solution be used:

	Parts
Benzene	2.0
Alcohol	10.0
Ammonia	2.5

As soon as the benzene is thoroughly mixed with the alcohol, add the ammonia, stirring slowly.

Although the above solution is said to be effective in most cases, in the event it fails to remove the stain the use of the following composition is recommended as an alternative:

	Parts
Glycerine	4.0
Lactic acid	4.0
Amyl acetate	3.0
Ethyl Acetate	1.0
Butyl alcohol	6.0-7.0

After the first four ingredients have been mixed, butyl alcohol is added, with slow stirring, in an amount sufficient to yield a clear or water-white solution.

Another, more-or-less general spot eradicator, given in an older technical text, (9) consists of:

	Parts
Alcohol	50.0
Ammonia water	15.0
Benzine	5.0
Glycerine	5.0
Ether	3.0
Spirit of lavender	1.0

If desired, a little water may be added. This mixture should be dispensed in tightly closed glass containers. It is applied to the spots with a sponge, but is ineffective against alkali stains and must be used with caution in cleaning colored goods.

OF the various types of stain removers sold to the public, those based solely on organic solvents are undoubtedly the most important and most popular. Used singly or in simple admixture, such solvents are very effective for removing a variety of common stains like oils, greases, tars, asphalt, paint, varnishes, lacquers, nail polishes, soot and many others. Often their use facilitates the removal of grease-bound dirt and grime, so that simple mechanical means are subsequently effective in eradicating the residual discoloration. (10).

Quite a number of solvents are used for this purpose. Among the older hydrocarbons, benzene and petroleum ether (benzine) are widely used to remove organic stains like fats, oils, tars and greases. Stoddard's solvent, a special petroleum distillate developed as an improvement over the older hydrocarbons, is extensively used by the dry cleaning industry and also finds frequent use in stain removing products. Deodorized naphthas have recently come on the market. Sulfuric (ethyl) ether and chloroform are good solvents for greasy stains and in addition also aid in removing some types of metallic soil. Though not much used today, chloroform, being less inflammable, is preferred to ether. Acetone is used mainly for lacquer stains. It is also useful, as is butyl alcohol, for homogenizing reagents containing organic solvents and water. (11) Ethyl alcohol, another important solvent for many stains, is frequently used in stain removers. Methyl or wood alcohol, though a good solvent, is but little used because of its more toxic qualities.

The chlorinated hydrocarbons, represented chiefly by carbon tetrachloride, trichlorethylene and tetrachlorethylene, are used for the same purposes as benzene and similar solvents but have the added important advantage of not being inflammable. Although carbon tetrachloride is the most important of this group, trichlorethylene is said (10) to have certain advantages with respect to cleaning efficiency, stability and lower toxicity. In addition to its efficacy against greases and oils, trichlorethylene is also a good solvent for gums, rubber, chewing gum and many resins. Its chief disadvantage is a tendency to cause bleeding of dyestuffs in many cellulose acetate (rayon) fabrics.

A number of other solvents find use in stain removers because of their particular efficacy against certain types of soil. Ethyl acetate, to cite but a single example, is often utilized in such products because of its good solvent action for oils, fats and waxes.

Because different solvents possess certain superiorities with regard to their ability to dissolve different types of stains or spots, it is quite understandable why mixtures will generally provide a greater all-over efficiency than that available from the use of but a single solvent. This tendency is illustrated in the following typical formula for a spot remover described (6) as useful for stains from grease, oil, paint and lacquer:

	Parts
Alcohol	10.0
Ethyl acetate	20.0
Butyl acetate	20.0
Toluol	20.0
Carbon tetrachloride	30.0

The method of using such a stain remover is also typical of products based on solvents or solvent mixtures. As a generally recommended procedure, the soiled area is placed over a piece of clean paper, blotting paper, cloth or other absorbent. The area is then wet with the cleaning fluid, rubbing with a clean cloth from the outer edges toward the center so as to avoid a ring. A clean section of the rubbing cloth and a fresh section of absorbent is used for each application of the fluid.

Since practically all stain removers based on solvents present the hazards of inflammability, toxicity or both, it is important that the products be used out-of-doors or at least in a well ventilated room. In this connection, it is important that manufacturers check regulations concerned with the production, shipment and sale of such products.

A quite efficient, non-inflammable stain and spot remover may be made from carbon tetrachloride without admixture with other solvents. Very frequently, however, because of price considerations and to obtain more rounded products, this material and its related chlorinated hydrocarbons are added to other solvents in order to reduce fire and explosion hazards. According to Mason, (12) the standard of non-inflammability is sixty parts of chlorinated hydrocarbon and forty parts of an inflammable solvent like petroleum naphtha (benzine). Such a mixture is not dangerous from the standpoint of inflammability as long as it is kept in a closed container to avoid evaporation. In the open, however, chlorinated hydrocarbons are very volatile, often more so than the other components of the mixture, so that an inflammable product readily results. Although the vapors of the chlorinated solvents have a toxic effect, they can be used with comparative safety if handled with suitable precautions, especially with respect to ventilation.

Even though the sixty-forty ratio is considered the standard of non-inflammability, technical formulas for

stain removers indicate a trend toward a higher proportion of chlorinated hydrocarbons. British authorities, (13) for example, recommend the use of a mixture of five or more volumes of carbon tetrachloride with one volume of benzine. Also illustrative is an American formula (6) for a simple, non-inflammable cleaning liquid for removing grease spots from delicate fabrics:

	Parts
Kerosene	1.0
Carbon tetrachloride	3.0

If desired, the odor of this preparation may be covered by the use of a small proportion of oil of citronella.

Somewhat more complex, but also indicating the use of higher proportions of chlorinated solvents, is a slightly more complex grease and oil stain remover consisting of: (13)

	Parts
Amyl acetate	1.0
Amyl alcohol	10.0
Benzine	150.0
Carbon tetrachloride	839.0

It has long been known that in spot cleaning rayon fabrics, special care must be taken with cellulose acetates since they are readily soluble in many organic solvents, preparations containing acetone being particularly guilty in this respect. Aside from the precaution of a preliminary testing of a portion of the fabric, Hillman (11) cites the recommendation that the addition of an equal volume of glycerine to any spotting agent used will prevent solution of cellulose acetate. Also mentioned is the claim that the addition of 100 parts of soap to 30 parts of any standard solvent will prevent any harmful action. With either of these methods, the stain is spotted as usual, this to be followed by a rinsing or sponging with soft water until all the solvent is removed.

SPECIAL soaps are very extensively employed in dry cleaning procedures and to a considerable extent in stain removing or spotting operations. So called dry cleaning soaps or "benzine soaps" are often mixed with dry cleaning solvents as detergent aids. These are said to absorb surface moisture on fabrics, thereby permitting greater penetration of and wetting by the dry cleaning solvent. (10) In other words, these special soaps aid in softening the stain and removing the dirt. They are also useful as spotting compounds, especially for heavy grease or wax stains on materials like silk and wool. In such usage, the soap, which is combined with a solvent during its manufacture, is put directly on the stain and allowed to act for a while. It is then well rinsed in a solvent like carbon tetrachloride, Stoddard solvent, gasoline or benzene. (1)

Other special soaps, generally known as "solvent soaps," made with one or more solvents, are often recommended for removing difficult or tenacious stains, particularly those of a greasy nature. Although a number of formulas for making such solvent soaps are available, (6,13) the following is perhaps as illustrative as any:

	Parts
Soap	30.0
Trichlorethylene	25.0
Water	45.0

Another quite simple preparation of this type is mentioned by Hillman (11) as giving "very good results" in the treatment of black lubricating grease stains. Such materials are very hard to remove because of their high content of metallic soaps. A spotting material for such discolorations is made by adding 50 cc. of hexalin (cyclohexanol) and 50 cc. of carbon tetrachloride to 125 Gm. of a 50 per cent neutral soap paste in a churn. Stir vigorously until emulsified. While still stirring continuously, add carbon tetrachloride in an amount sufficient to make one liter. To remove grease stains, this spotting agent is allowed to soak in the soiled area for one hour, after which it is removed by thorough scouring.

As remarked by Trevor (14) in his discussion of spotting chemicals, triethanolamine is rather extensively employed as a saponifying agent in making special soaps. The fatty acids used may consist of stearic or oleic acid and the solvent base is often a mixture of solvents. In his article on spot removers, Mason (12) lists a product of this type as consisting of:

Oleic acid	3.35%
Triethanolamine	3.35%
Trichlorethylene	80.00%
Alcohol	13.30%

On occasion other soap-solvent combinations have been described in patent sources. Indicative is a patented compound (15) for removing oil and other spots from fabrics. This is prepared by emulsifying liquid hydrocarbons or chlorohydrocarbons in an aqueous solution of castile soap. To this is added a small quantity of a weak acid, like acetic or boric acid, to neutralize the free alkali.

Synthetic detergents are also finding useful application in making stain removers. According to one manufacturer's publication, a satisfactory spotting mixture can be made from:

*Aerosol OT (100%)	1 lb.
Stoddard solvent	2 gal.
Water	3 pints

Soap is a major component of special spotting compositions made available in paste or solid form; the latter often being molded in the shape of a rod or pencil. Offering definite conveniences and economies, such products may contain solvents or other substances as useful adjuvants. Stain removing pastes, often described in the older literature (9,13,16) and occasionally in patent specifications, (17) have their more modern counterparts. Indicative is the following spotting soap described (6) as being suitable for packaging in collapsible tubes:

	Parts
Oleic acid	30.0
Triethanolamine	14.4
Benzine	20.0
Tetralin	15.6
Water	20.0

Heat the oleic acid to 60°C. and add the triethanolamine at the same temperature, with stirring. Allow to cool somewhat and add the solvents with thorough stirring. Finally add the water at 60°C., while mixing vigorously. Cover, allow to stand overnight and fill into tubes.

It is not so long ago that cakes of soap were cut into small rods or bars, wrapped in heavy foil, and sold as stain removing pencils. Despite their crudeness, such products were quite effective for removing a rather wide variety of stains. Nowadays, soap remains the basis of such pencils, but other ingredients are added to give

* Aerosol, not to be confused with insecticide-aerosols, is trade name of synthetic detergents manufactured by American Cyanamid & Chem. Co.

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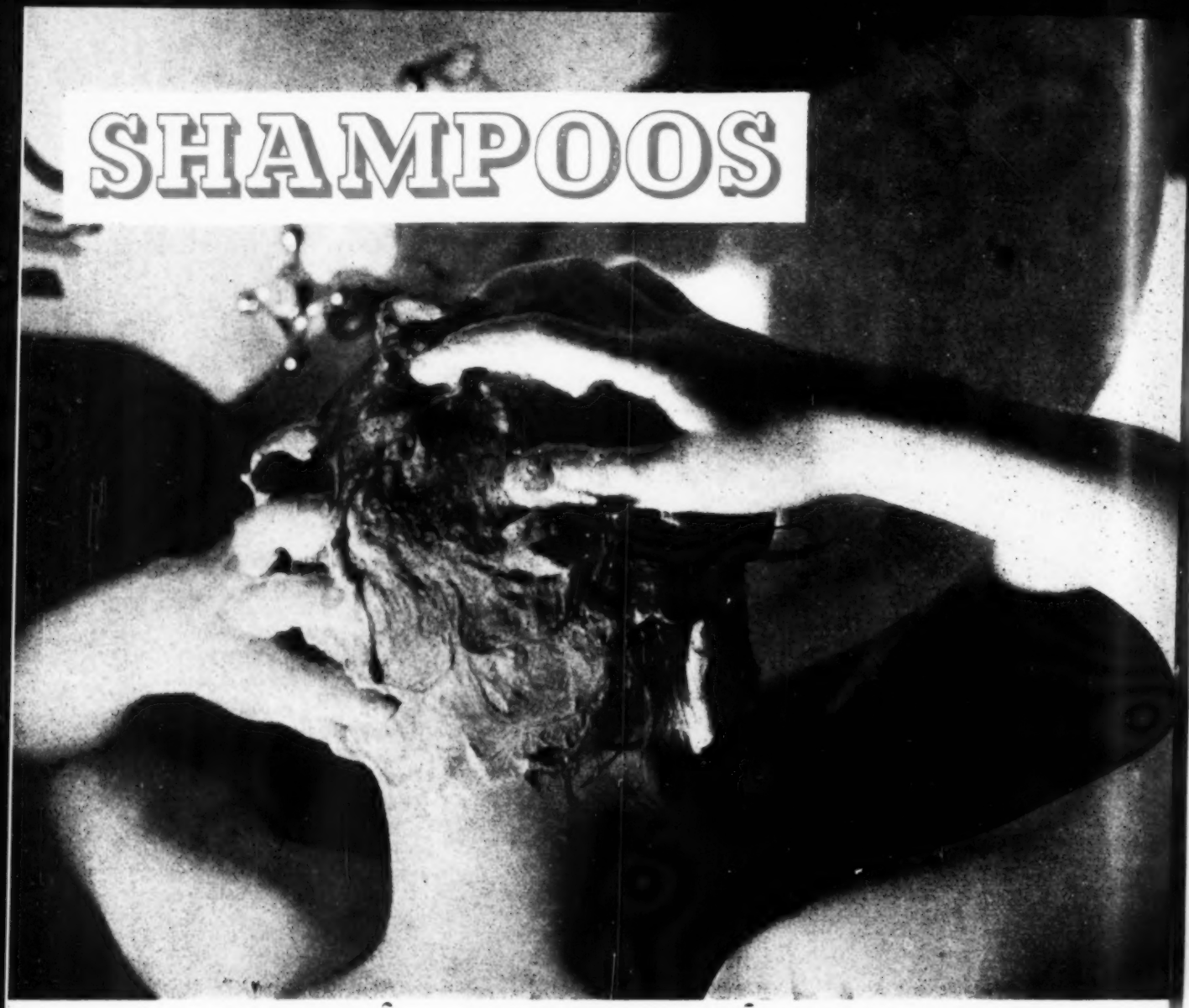
SHAMPOOS



TO THE average person listening to radio programs or reading the advertisements promoting the sale of some shampoos, it is quite evident that much of the propaganda is based upon exaggeration. Facts very often defer to distortion. The purveyor in many cases ballyhooing his product seeks to create in the consumer's mind the idea that a crowning glory of beautiful hair is dependent upon using his particular hair cleansing preparation. At times it is implied, through negative type of advertising, that ills of the hair and scalp are due to the use of "other" competitive, inferior types of shampoos or ordinary soaps. In still other cases the advertising copy is of such a nature that a shampoo comes close to being represented as a cure-all for certain scalp and hair ills that cannot be remedied by merely shampooing the hair.

Since these conditions are existant, it is of constructive interest, first to pause to consider the anatomy of the hair and scalp briefly, as well as the more common ailments affecting them. We will then comment upon the various types of shampoos found on the market today and consider their properties. Finally we will discuss shampoo composition and methods for making these various types.

The hair and the skin are closely related. As a matter of fact the hair is a part or appendage of the skin. Its growing part lies imbedded within the skin in the form of a follicle. The outer, horny portion does not possess any blood supply or nervous system. As the hair is cut, it will continue to grow from the follicle, at times called the "hair root." Any application to the outer hair to cause it to grow is futile. The hair itself consists of three parts, the outer cuticle, middle cortex and inner medulla. The color of the hair is dependent upon how the light refracts the pigment within. There is no central tube in the hair as now and then is occasionally proclaimed or believed by those who singe the hair to seal this canal, especially after a haircut. The follicle of the hair is seated in epidermis and corium and at its base are the papilla which keep the follicle in contact with the blood supply. The sebaceous glands

First of a series of articles reviewing their types, composition, use, properties and manufacture

By Dr. E. G. Thomsen

also surround the follicles and secrete their oil directly against the hair. Then, too, the follicle possesses a muscle which involuntarily causes the hair to straighten or stand up as we say, usually through fright.

As the hair ages, it may fall out, but new hair may grow in its place. This is due to the vital growing spot which lies near the papilla and within the follicle. When this vital spot loses its regenerating power, hair discontinues to grow. Persons, then, who lose their hair and seek to regenerate it must look further than some mere external application. Internal medicines undoubtedly can play a more important part in restoring lost hair than shampoos or tonics.

The most common ills of the hair and scalp which are emphasized by manufacturers of shampoos are baldness and dandruff. Baldness or alopecia is found in different forms. Some infants are born without hair on their heads or sections of hair missing on the scalp. In the case of "alopecia areata," patches of baldness cover the scalp. While various reasons are offered for its cause, none can be fully substantiated. In still other cases, we find loss of hair occurring after severe illnesses accompanied by fever, like typhoid, scarlet fever or influenza, or by skin eruptions like erysipelas. Still other ailments result in baldness. Such conditions are referred to as symptomatic loss of hair. The most common loss of hair is the one that just happens without any recognizable ailment of the scalp. Goodmen* calls this type of baldness "premature idiopathic alopecia". Here again numerous causes are given, but since healthy and normal people, in other respects, lose their hair just as frequently as those in ill health, it makes it difficult actually to give the real reason. As a treatment for such conditions, it is known that hygiene through frequent washings of the hair is believed helpful, but by no means is this procedure a complete deterrent to arrest the condition. Proper massage of the scalp after washing is also held to be helpful and a diagnosis of health in general may result in helpful suggestions to preserve the hair or retard its loss.

A few years ago, it was maintained in certain directions that alternate vacuum and pressure applications to the scalp stimulated hair growth. This idea which received wide publicity, was instigated by the fact that diver's and "sand-hog's" hair usually grew profusely. A rather expensive apparatus for massaging the scalp according to this principle was devised and sold in considerable volume. Unfortunately this method of producing hair growth on bald heads was found to be futile and discontinued.

Dandruff, a scaly disease of the scalp, is the other common ailment that shampoos seek to correct. We have already said that the sebaceous glands surround the hair and secrete their oil along the shaft of the hair. At times this oily secretion is mixed with decomposition matter from the cells which is horn-like in nature and is forced to the surface of the scalp. The secretion may be deficient or excessive. If improper hygiene of the scalp and hair is practiced infection by bacteria may result. At least three types of microorganisms are said to have been found on scalps with dandruff present. Infection may result in various establishments like barber shops, hat shops or public rooms and golf club houses where community combs and brushes are used. Numerous cases are also evident where the hair is combed in public with pocket combs.

Dandruff is a general term which includes several scaly diseases of the scalp of a more serious nature. For that reason it is a safer policy to refer to "loose dandruff" in making claims for its removal by shampoos or other external preparations. While dandruff also is believed to cause loss of hair, the real reason for this is not known. It is probable that the enlargement of the sebaceous glands and consequent clouding of the hair follicles may bear some relationship to the hair disappearing when dandruff is present.

Dandruff removal is aided but dandruff is not prevented by shampooing. Proper cleansing of an infected scalp is of prime importance. This should be combined with treatments designed to reduce or stimulate the secretions of the sebaceous glands depending upon their activity. Applications of germicides to reduce bacterial infections are desirable. The possibility of using an antiseptic soap by incorporating a soap-stable germicide has considerable advantage in obtaining both antiseptic and cleansing properties by one application. The addition of alcohol or other grease removing solvents in the shampoo may be helpful. Mechanical massage or thorough brushing of the hair with a clean brush both before and after the shampoo is advisable. The application of "after shampoo" hair tonics or antiseptics is not to be criticized, especially if they are rubbed in well.

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* H. Goodman, "Cosmetic Dermatology," p. 229 (McGraw Hill).

SOAP MAKING *in the Pacific . . .*

War story of a small soaper, his plant, and the U. S. Navy Military Government on Guam

By Fred Wessock, SK 1/C

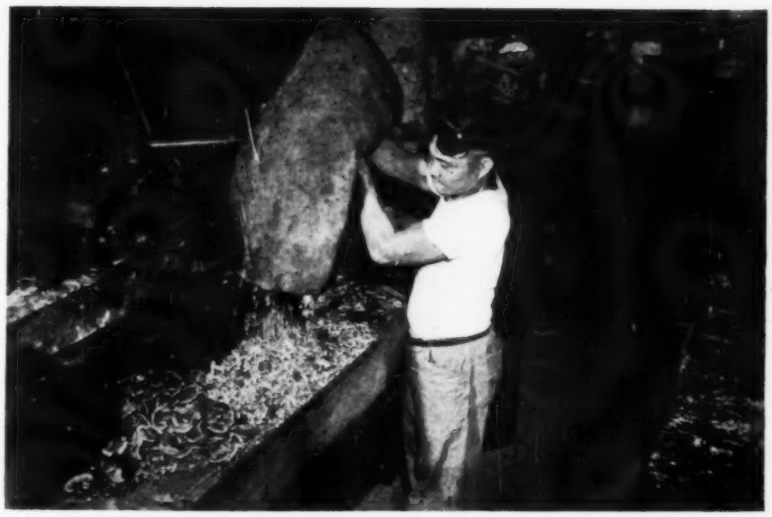
WHEN the Americans recaptured Guam from the Japanese in July, 1944, they blasted the city of Agana into ruins and along with it a small soap factory operated by one Josef Ada, a Chamorro. The importance of this factory was out of all proportion to its size for it was one of the main sources of soap for the natives of Guam. But the destroyed factory, now a mass of twisted debris, had been small but modern and turned out a tonnage of soap ample for the Guam market. When the U. S. Navy took over the administration of Guam after its recapture, the problem of a lack of soap for the native population was more serious than might be supposed.

Ada, the soap manufacturer, was not long in searching about for some way to produce soap to replace that formerly supplied by his devastated factory. With the help of his sons, he erected a crude shanty, salvaged some odds and ends from the old plant, picked up a tank here and an engine there, and was soon again back in the soap business. The sign which he hung from the new "plant" announced to the world that Josef Ada was again producing soap for Guamanians. A *Life* magazine war photographer sent a shot of Ada and his new make-shift factory back to the States. It was published and Ada was famous.

The Military Government Unit recognizing the seriousness of a lack of soap for the island population took immediate steps to encourage production by the Ada factory. Lt. Roland Grimm, U.S.N.R., of the Military Government assigned the author to assist Mr. Ada in every way to expand his soap production. At the beginning, the Ada plant was turning out only some three or four hundred bars a month in crude hand operations. The soap was made almost wholly of coconut oil as this was the only fat available. Later waste fats from Navy and native kitchens were used along with coconut oil. It was the habit of Mr. Ada to arise at three A. M. and ride the wholesale trucks to various districts of the island in search of excess coconut oil which sometimes could be bought from the natives, but this collection method was not wholly satisfactory.

The first step in aiding Mr. Ada in collecting more coconut oil was to ask the different villages of the island to fill a definite quota, but although this plan worked for a short time, it eventually proved unsatisfactory. Then, Ada remembered an old sugar cane crusher which he had previously owned and which the Japs had taken away from him. It was located deep in a jungle swamp, but was found, repaired, and was hooked up with a four-cylinder Dodge motor supplying the operating power. Collection of dried copra was organized and for the first time since he began, Ada was able to count on a dependable supply of coconut oil for his soap making operations.

Pictures: Left top, Josef Ada discusses a soap bar from his war-baby factory with two G.I. advisors. Other views on left show crude hand soap making operations in the make-shift plant. And in spite of plant crudity, note goggles on workman,—a badge of good sense. *Right:* The copra must first be crushed. And a view of the soap "kettle" and troweling soap in the small wooden "frames." *Bottom:* A "frame" of soap is stripped.



As the make-shift factory increased its output, it was seen that by bringing in new soap making machinery from the States, the output of the soap plant could be increased to take care of a much larger share of Guam's soap needs and considerable scarce shipping space on ships from the States could thus be saved for use by essential war materials. The Navy Department sent out Lt. Willis Beach, U.S.N.R., from the States to conduct a survey and to make recommendations as to conditions then existing on Guam. Lt. Beach aided in making up a requisition for the needed equipment and sailed for the States soon thereafter to expedite its delivery* The plant equipment is expected to reach Guam some time next month.

In order to increase the output of coconut oil, a second sugar cane crusher was located and put into operation on copra. A crutcher from the old soap plant was salvaged, repaired and put into operation. A Williams crusher was also reclaimed and from the ruins of the original plant, even the Anderson Expeller was salvaged from the rust and rubble and has been put into operation to replace entirely the cane crushers which had been used.

A number of stories have been written in G. I. magazines and elsewhere about Joseph Ada's soap factory. The dogged determination and

* Ed. Note: Until Mar 1 Lt. Commander Beach was stationed with Military Govt. staff, Bureau of Supplies & Accounts in Washington,—formerly with P&G and Hershey Estates in pre-war days. Lt. Comm. Beach was a recent visitor to our office and showed us the plans for the new Guam soap factory.

promptness with which he culled parts from the wreckage of his old factory destroyed by gun fire and in spite of numerous obstacles started anew to produce soap made him something of a hero to the natives of Guam as well as to American G.I. personnel. His hopes are for a complete new factory in the future whether the Navy project is a success or not. With a background of soap making education acquired in Germany many years ago, plus new and modern equipment, he plans to give Guam not only much better soap but a lot more of it.

THE early history of Ada soap making and likewise his experiences during the occupation of Guam, Saipan and other Pacific islands by the Japanese make an interesting tale. Born in Guam in 1885, Joseph Ada moved to Saipan as a small child when his father took a position as supervisor of coconut groves in the northern Marianas Islands. Saipan was then a Spanish possession, but with the rest of the Marianas was eventually sold to the Germans for $4,500,000. One, George Fritz, was sent by the Germans to act as resident governor for the Marianas.

When the Marianas went German, the natives generally could speak Spanish and English, but it was not long before the use of English was banned by order of the German governor. Pedro Ada, father of the present Josef Ada, became interpreter for the German Governor and through this connection obtained from Fritz all the copra rights for the Northern Marianas. In addition, Fritz lent Pedro Ada the money to form the Pagan Copra Company. With him in the venture were two partners, a Vincente Dias and a Japanese named Simizu.

Through his connections in Japan, Simizu rented a small 300-ton schooner and from the proceeds of the first copra shipment to Japan cleared enough money to buy a small schooner of their own. The copra business was successful from the start, Pedro Ada making in excess of 100,000 marks per year. At the end of four years, the contract rights to copra in the islands expired and the governor drew up a new contract. It was at this time that Simizu, the Japanese, was eliminated as a partner inasmuch as Fritz, the German Governor, disliked the Japanese intensely. Time went on and Pedro Ada prospered, selling copra in Japan and on return trips bringing merchandise for his store in Saipan.

In 1906, the father sent Josef Ada to Frankfort, Germany, to study the latest methods of European soap manufacture. Antonio, another son, had previously been sent to Europe to learn bookkeeping. Josef stayed in Frankfort for 18 months and then returned to Saipan. Due to entirely different climatic conditions in the Pacific, Josef at first encountered considerable difficulty in producing satisfactory soap. Josef had to write to Germany for new instructions much to the annoyance of his father who expressed the belief that Josef had not learned much in Germany and had been wasting his time there. But with the arrival of new data from Germany, the problems were solved, production increased and the soap plant in Saipan began to prosper. The home market was supplied and some soap was exported to the Caroline Islands and even to Shanghai. In 1911, the elder Ada died and Antonio Ada returned from Europe to carry on a successful business with his brother, Josef.

When World War I broke out, the Japanese were quick to take over the northern group of the Marianas Islands from the Germans. The Japanese began to infilter into the islands in ever increasing numbers, and as they were always inclined to be somewhat clannish, they would never buy from a Chamorro, but always purchased from Japanese stores and only Japanese material. As a result, the Ada store began to decline in sales as did the soap plant. The Japanese went into sugar cane planting in a big way, and the Adas followed suit. Since all civil administration was under Japanese control, surveys were taken each year of all the land that the Adas owned. Each survey would result in some of the land being lopped off! Josef became well aware of Japanese so-called plan of co-prosperity long before most Americans had heard of Pearl Harbor! In 1928, Antonio died, and the Ada family moved back to the island of Guam. Josef Ada went back into the soap manufacturing business again even though at that time there were three soap makers on Guam. The local soap was considered far superior to imported soap from the States due to the exclusive use of coconut oil used in manufacture of the native product.

At one time, the Ada soap factory on Guam was valued at more than $25,000. The machinery consisted of an Anderson No. 1 Expeller, used for extracting coconut oil from the copra. Supplementing the expeller, was a Williams hammer mill crusher which broke up the copra into the size of corn kernels before the material reached the expeller. Two large 25 HP Fairbanks-Morse diesel engines supplied the power. Large warehouse space was utilized to store the incoming copra where after being stored it was later dried by mechanical means. During the Japanese occupation, Josef and his three sons were forced to produce soap for the Jap Army and Navy. When the American supply of caustic soda ran out, wood was burned to furnish an alkali substitute. And thus carried on the Ada plant until the return of the Americans and the beginning of a new day in soap manufacture in Guam.

When cotton fabrics containing copper naphthenate are subjected to leaching in water, the ability of the samples to withstand microbiological attack in the soil-burial test is impaired. It has been shown that this effect is not the result of loss of copper during the leaching but appears to be associated with a change in the copper naphthenate whereby a portion of the copper is converted into a solvent-insoluble form. The presence of wax reduces the effect to insignificant proportions, while the presence of asphalt has little effect. *Am. Dyestuff Reporter* 34, 457-60, 471-3 (1945).

A washing powder comprises a mixture of a cellulose ether of a carboxylic or sulfonic acid, and an alkali salt. The cellulose ether and salt are mixed and the mixture combined with other ingredients. L. Backhaus, to Kalle & Co. A.-G. German Patent No. 739,033.

CAUSTIC POTASH...

*By James E. Ferris**
Niagara Alkali Company

THE caustic potash industry got its start in the United States when the Allies blockaded Germany during World War I. Prior to that time, the German potash cartel dominated the world supply of potassium compounds. During World War I, many American industries, particularly the soap industry, found they could not meet their production requirements on the meagre caustic potash supply manufactured by the lone American producer who used raw material obtained from domestic sources and sources outside of Germany.

Those who remember not only the short supply, but also the skyrocketing prices of caustic potash in World War I, are aware of the great contrast in World War II. Although they had many problems in the late war, I do not believe any soapmaker failed to make the soap our government required or his civilian fats quota permitted due to his inability to purchase caustic potash. I am proud of my industry's record in being able to say this to you. But what many may not know is that the potash soap industry also may take pride in our achievement because it was the support given by the soap industry that enabled us to expand our domestic production to the point that we were able to make this creditable showing during World War II.

Before World War I ended, our Government realized the urgent need of developing a large domestic supply of potash to meet both war and peace demands. Large sums were appropriated to develop domestic sources of potash salts. New deposits were found in New Mexico, and the lone operation in Searles Lake, California was expanded. Before this expansion took place, however, the domestic market was flooded again with foreign muriate, which by nature was a purer product than domestic muriate. When this happened, domestic producers of muriate asked the caustic potash manufacturer to state his reasons why the domestic material could not be used in preference to foreign material. The answer was that domestic muriate tested around 90% KCl as against 98% KCl for foreign muriate selling at the same or lower prices. The domestic muriate producer thereupon undertook a series of developments, which today provide a refined muriate of potash exceeding in quality that of any muriate in the world. Thus was the American potash industry developed from raw material through to finished caustic potash.

However, it was largely through the insistence of the potash soap industry on the quality of the finished product (caustic potash) which caused us to insist upon development of a higher quality of raw material (muriate), which in turn freed the American caustic potash industry from dependence on foreign raw material supply. Insistence upon high quality caustic potash proved to be "Manna from Heaven" not only for the soap industry, but for others as well as our own during World War II. Soapers and their customers have reaped the benefit not only through receiving a continuous and ample supply of caustic potash, but also through the price paid for this raw material. If soapers will check their records, they will find that during World War II they paid the same basic price for caustic potash as prior to the war. I wish for the soap industry that all of its raw material problems today were as simple as that of obtaining caustic potash.

Caustic potash is basically produced by the electrolysis of muriate (potasium chloride) brine. We have two sections of this country supplying the muriate used in the potash industry—California and New Mexico. The muriate from California is of better quality testing well over 99% but is not available in sufficient quantities to take care of the domestic demand and the deposits from New Mexico are also required. The analysis of the muriates from these two sources are not too far apart but each are obtained from different natural sources and thus require different methods of purification to eliminate objectionable impurities.

At the present time, California muriate leaves little to be desired as it contains only small quantities of impurities mainly lime and magnesia and insoluble matter which are readily removed by the caustic potash producer. This was not always so however—in fact, only relatively a few years ago this muriate contained as much as 1% bromide as KBr. Now, due to the build-up of mother liquors during the manufacture of caustic potash, this bromide impurity might very well have shown up in the finished product and perhaps the soap industry would eventually have got around to identifying bromide with some troubles they were encountering. However, before this took place it was another industry that first caught the presence of this bromide impurity and not in the finished caustic potash but in the chlorine produced. In the production of some pure chemicals bromide was found, which led to trouble. After thrashing out the matter, our own company installed equipment for

* Address before Potash Soap Division, Association of American Soap & Glycerine Producers, New York, Jan. 10, 1946.

the removal of this bromide impurity from the muriate. A short time later the muriate supplier decided that bromide was of value to them and decided to do his own removing which necessarily scrapped our equipment. I mentioned this purification step because later I want to point out the steps the alkali industry as a whole has taken to bring about the present day high quality caustic potash. The removal of this relatively high impurity—namely about 1%—resulted in a muriate of very high purity approaching 100%.

The muriate from New Mexico however, testing approximately 99% KCl, has the balance of impurities in the form of common salt (NaCl) which is extremly difficult to remove in the presence of such a high potash chloride content. In fact, it has just abut reached its limit with the result that the present day caustic potash has a slight quantity of Caustic Soda present as an impurity in the neighborhood of 1/3 of 1% in the liquor and approximately ¾ of 1% in the solid forms which, however, gives little or no trouble in the majority of uses in this country.

IN producing caustic potash, the muriates are dissolved in water at the caustic producer's plant to form brine and after further purification and filtering for the removal of small amounts of impurities, the resulting pure brine is fed to the electrolytic cells. Under the influence of the electric current, hydrogen and chlorine are liberated and caustic potash is formed in solution in the cell liquor. This cell liquor, testing from 10% to 12% KOH and carrying an equivalent quantity of KCl in solution is then concentrated to a 50% KOH strength and the excess salt, which precipitates out, is removed. All of the impurities such as salt, carbonate, iron, etc.—are not completely removed at this point due to their solubility in this strength caustic potash liquor. However, we can say that they are about at their saturation point. Further purification of this liquor therefore by filtration removes all the excess salt, carbonate and iron with the resultant clear, water-white caustic potash liquor which consumers receive today. These so-called small impurities of salt (½ to ¾%)—Carbonate (¼ of 1%) and iron (5 ppm) cause little or no concern particularly in the soap industry.

The bulk of the caustic potash used today, and this pertains to the soap industry more than any other, is shipped and used in the form of liquid mainly from the standpoint of ease in handling or other economic reasons. This strong 50% caustic potash liquor is also fed to direct-fired kettles for further evaporation to either 85% or 90% KOH.

Before mentioning the available forms of caustic potash, I want to point out that in the present market—or should I say near future market—the term "tailor-made" raw materials is not by any means new to the caustic potash producer. We believe we have been doing this very thing for years and will continue to do so in the future as long as new problems arise. The best proof we have for this "tailor-made" raw material trend is the fact that we have today, to begin with, two types, first, Caustic Potash-Regular and second, Caustic Potash-Low Chloride. The former is made in eight different forms consisting of Solid, Flake, Granular, Broken, Walnut, Crushed, Powder and Liquid. The Solid, Flake and Granular in two different strengths—85% and 90% —and the liquid in two different strengths—45% and 50% KOH. These forms in the case of the anhydrous material are available in 24 varying sized packages from 25 pound drums to 700 pound drums according to product. In the case of the liquid, caustic potash is available in two different packages, 55 gallon drums and tankcars. The Caustic Potash-Low Chloride is available in three different forms, Solid, Flake and Liquid, the anhydrous testing approximately 85% KOH packed for shipment in three different sized packages from 100 pounds to 700 pounds varying with the product; the liquid in two different packages—55 gallon drums and tankcars. Each and every one of these types and forms were developed to meet some exacting rquirement by industry.

In the not too distant past when the caustic potash used in this country was imported from Germany, the bulk was in the form of solid and some in flake form. When the domestic producers started manufacturing during World War I, it was mainly in these two forms. With the demand for potash exceeding all production facilities and the muriate raw material of extremely poor quality, there was no question but the domestic material was a far cry in quality from the German material. I remember seeing samples of solid domestic-produced material that had a color "sixteen shades darker than coal" with a resultant solution not much better, requiring days for the iron to settle out.

Inasmuch as the consumer in most instances used caustic potash as a solution by dissolving the solid, the domestic producer then turned most of his efforts to developing a liquid caustic potash that would bring about a liquor of higher quality than that obtained from dissolving the foreign solid. Due to lower production, packaging and shipping costs, domestic producers were able to offer liquid caustic potash to the consuming industries at a lower price. These lower costs boiled down to a price differential between solid and liquid amounting to 50c per hundred pounds in favor of the liquid. Continued improvements in the quality of the raw material and manufacturing improvements in the finished product have resulted in the present water-white caustic potash liquor with which the soap industry is now so familiar.

ORIGINALLY caustic potash liquor was shipped mainly as strong liquor testing 48-50% because of the saving in freight. The use of this form of caustic potash showed a saving over solid caustic potash in the neighborhood of $3 to $4 per ton. Based on selling price differential alone —a substantial saving—and with other added savings accruing at the consumer's plant in handling—the saving runs into figures much higher. The limitation on this saving however is

set by the freight rate applying on the liquor and where this rate is less than 50c per hundred pounds (the differential between the selling cost of the liquid and solid) then the liquid delivered cost is below that of the solid, but where the freight rate exceeds 50c the freight advantage is in favor of the solid form. The use of liquid naturally requires the consumer to have a railway siding for unloading.

One objectionable feature encountered in many instances with the use of this strong caustic potash liquor was the freezing point, or the point when crystallization took place due to cold weather. Not all plants had ample steaming facilities to thaw out cars, and since this liquor will crystallize at approximately +46° F, this was a continuous problem during the winter months. The redissolving of the crystals was a slow job and the resultant solution not always uniform in strength due to lack of agitation. This difficulty was overcome by purchasing the liquor in the 45% KOH strength instead of the strong 48-50% KOH. The weaker liquor (45% KOH) does not crystallize or precipitate crystals until a temperature of —22° F. is reached and even at this temperature can be super-cooled to some extent. The use of such a liquor, in most instances, will overcome steaming or redissolving problems, and only in rare cases of extreme winter conditions, occurring only once in 25 years when such low temperatures were reached, did the use of this liquor ever create a problem. In our experience we have never had a freezing problem come up with the use of 45% KOH liquor. Of course, where extreme northerly located plants are involved, inside storage is recommended. This weaker strength liquor therefore has become the most widely used because of the freedom from crystallization problems and the further fact that it is shipped in uniform strength from season to season requiring no watchfulness when sudden changes in weather take place. From the economic standpoint the use of this liquor in place of the strong 50% liquor only results in an added cost of approximately 50c per ton. There is no question but for the large user of caustic potash, having railroad facilities for handling it, that caustic potash liquid is the most economical form to use from the price angle alone. Handling costs are materially lower requiring only the operation of a pump for unloading and pumping and does away with the continual shifting of drums which are heavy and awkward to handle.

CAUSTIC potash-solid is the next most economical form to use where no immediate railroad sidings are available. The old practice of dissolving this form by punching holes in the drums and lowering them into a dissolving tank filled with water has been more or less done away with. Over a period of years we have endeavored to convince soapmakers who are iron conscious, that the iron in the steel drums was readily attacked by the hot caustic solution with the result that the practice of stripping the steel from the drums was finally almost universally accepted. Not only is there less danger of high iron impurity in the resultant liquor but no contamination is encountered from the protective paint coating which the producer generally applies to his drums. This dissolving job was also made easier by the use of special lifting tongs to handle heavy 700 pound cakes of solid potash. This was another alkali industry step in meeting a bothersome requirement in the soap industry. So much hue and cry has been made in past years by consumers of this form of potash, particularly from the standpoint of iron content, that an 85% KOH product was developed containing 1/5th the amount of iron as compared to the 90% KOH. This strength material has been in most instances adopted in preference to the 90% material because of this lower iron content.

In instances where water is objectionable in the use of caustic potash—or where small batches are to be made up—then caustic potash in the form of Flake, Crushed, Powder, Granular or Broken can be used. The physical and chemical characteristics of each of these forms are readily obtainable from the caustic potash producer—each having its own particular place in varying industries. The Flake and Granular are also available in either 85% or 90% KOH strengths and, as pointed out before, the iron content is the determining factor as to which should be used. Although many industries are not concerned over this chemical specification, this does not hold in the case of the soap industry because time and again the iron question is brought up and the alkali industry has had to face the problem with a resultant new form or improvement to settle the issue. The Granular form developed for the drain-cleaning and electro-plating fields has found favor because of its uniform particle size, relatively small (about the size of the head of a pin) as compared to the regular flake. Caustic Potash-Walnut is primarily consumed in the air liquefication industry being used to pack scrubbing towers requiring high efficiency in absorption and rather long life before replacing.

All of these forms require extra processing with resultant increase in selling prices over the liquid and solid forms but where is the "tailor" today who does not have to charge for that little extra something—and in this industry it is even more necessary due to high investment in equipment and the fact that handling chemicals at any time is relatively hazardous.

Caustic potash-liquid tests either 45% or the strong liquor 48 to 50% KOH and contains approximately ¼ of 1% carbonate—and about ¾ of 1% chloride. These quantities are not far from the saturation point in this strength liquid and, inasmuch as this liquor is shipped crystal-clear, any appreciable increase in the above specification percentage would result in a cloudy or milky liquor. This condition we have never had to contend with. These so-called impurities in the above concentrations can have little or no concern in the soap industry since the carbonate is just another form of alkali anyway which is used up in saponification and the chloride has little or no detrimental effect on soaps in general.

KOH, carbonate and chloride make up the main factors of specifications for present day caustic potash-

(*Turn to Page* 145)

TRADE NEWS. . . .

Oil Trades Name Blakney

J. H. Blakney, Colgate-Palmolive-Peet Co., Jersey City, N. J., has been nominated as president of the Oil

J. H. BLAKNEY

Trades Association of New York. The Association was scheduled to hold its annual meeting at the Waldorf-Astoria, Mar. 20. Mr. Blakney formerly served as vice-president of the organization. Other officers nominated include: vice-president, H. E. Brandli, Cities Service Oil Co.; treasurer, Gordon L. Benjamin, Gulf Oil Corp., and secretary, Joseph C. Smith, Smith-Weihman Co.

Kamen Incorporates, Elects

Kamen Soap Products Co., New York, announced its incorporation Mar. 1, with the following officers elected: A. L. Kamen, president and treasurer; C. B. Johnson, vice-president; Miriam R. Weissman, vice-president and Rae Kamen, secretary. The company maintains offices in New York and has a factory located in Barberton, O.

Fitch Acquires Canadian Building

F. W. Fitch Co., Ltd., recently have purchased the 12,000 square foot building at 408 Hopewell Ave., Toronto, Canada, extending it by a two-story, 121 x 100 foot concrete and brick building which will be used in the manufacture and packaging of toilet preparations. Facilities will be provided for the manufacture of a soap base.

New Washing Compound

Gaybex Corp., Nutley, N. J., last month isued a technical bulletin on their new "BEX UT-30" concentrated washing compound for metal cleaning and degreasing. The new product can also be used to clean tile, industrial shop floors, office floors, walls and desks, and be used in the home. It is an odorless, amber liquid that is chemically neutral and is claimed not to have any adverse effect on skin, cloth, metals or plastics. "BEX UT-30" is available in five-gallon and 54-gallon non-returnable drums.

C. R. Temperton, Lever, Dies

Charles Rhodes Temperton, 72, associated for 35 years with the advertising and sales department of Lever Bros., Ltd., died Feb. 21, at his home in Toronto. He had been ill for some months. During recent years he had travelled generally in Northern Ontario. A native of England, Mr. Temperton migrated to Canada as a boy. For many years he was a member of the Commercial Travellers' Association. He is survived by his widow and three daughters.

Du-Rite Introduces "Softee"

Du-Rite Products Co., is advertising a new laundry product, "Softee" in Chicago newspapers, for use in washing machines and for washing dishes.

Fitpold Detrex Div. Mgr.

Paul R. Fitpold has been named division manager for Illinois and neighboring territories for Detrex Corp. of Detroit.

Victor Berman Honored

Victor H. Berman, chairman of the board of Onyx Oil & Chemical Co., Jersey City, N. J., has been elected

VICTOR H. BERMAN

president of the Processing Oils & Chemicals Association, it was announced Feb. 15. Mr. Berman has been an officer and an active member of the association for many years. Plans are now said to be under way for enlarging the scope of the work of the association.

Vail President of AICE

James V. Vail, chemical director of Philadelphia Quartz Co., has been elected president of the American Institute of Chemical Engineers.

Speaks at Truck Clinic

Ray Sanders of Turko Products, Inc., Los Angeles, Calif., participated in a clinic on truck maintenance at a meeting of the Society of Automotive Engineers in Detroit, recently. Mr. Sanders explained desirable chemical and physical characteristics of products for specific cleaning jobs and gave managers concrete information about purchase of materials for cleaning truck running gears, washing decorative painted bodies, stripping old paint and shop cleaning of parts for repair or rebuilding.

C-P-P Advances H. D. Wolfe

Dr. Harry Dean Wolfe has ben appointed director of marketing research for Colgate - Palmolive - Peet

DR. HARRY D. WOLFE

Co., Jersey City, N. J., the company announced recently. Dr. Wolfe has been with the company since Sept. 1, 1943, when he joined the organization as manager of sales research. Before that he had been associated with the War Production Board, where he worked on the Inventory Limitation Control Order. A former professor of marketing at Kent State University, Dr. Wolfe was also connected with S. Kann Sons Co., Washington, D. C.

Mid-West Soap Head Tours S. A.

Mrs. Jeanette E. McPheters, owner of Mid-West Soap Co., Indianapolis, was one of sixteen businessmen and women comprising a party which recently made a 40-day airplane tour of South American trade centers. Mrs. McPheters, according to press reports, was seeking supplies of babassu oil, animal fats, waxes and other raw materials, as well as investigating market possibilities for her soap and chemical products.

P & G Expand in Canada

Procter & Gamble Co. of Canada, Ltd., is reported to be expanding its manufacturing plant at Hamilton, Ontario. The new 160 x 80 foot, six-story building addition of reinforced concrete will be devoted to the processing and packing of powdered and flake soaps. Another 102 x 51 foot, four-story structure will serve as a process building. There will also be a 102 x 80 foot, two-story machine shop and laboratory. Operation of increased manufacturing facilities will be under way by the end of the year, it is reported.

C-P-P Makes Research Grant

A grant of $120,000 by Colgate-Palmolive-Peet Co., Jersey City, N. J., to Northwestern University for dental research was announced recently. The research will be directed by Dr. Leonard S. Fosdick, professor of chemistry at the dental school.

Introduce "Nyon Suds"

Johnson Laboratories, Chicago 22, has announced a new product, "Nyon Suds," described as a new liquid soapless suds, for washing fine fabrics. Distribution is to be through grocery and notions departments of department stores and through groceries.

Chicago Soap Meeting, June 4

The second national forum on Potash Soap Manufacturing and Distribution Problems is scheduled to be held on June 4, at the Stevens Hotel, Chicago, according to a recent announcement of the Association of American Soap & Glycerine Producers. Although no program has been announced as yet, it is expected that the meeting will follow the general outlines of the January meeting.

Clyde Baldwin recently named manager of the wholesale drug department of Lever's Pepsodent division.

Thompson Joins Heyden

DeWitt Thompson, formerly associated with Mathieson Alkali Works, New York, recently joined the

DE WITT THOMPSON

sales staff of Heyden Chemical Corp., New York. He will cover Maryland, Pennsylvania and Western New York state. A commander in the U. S. Naval Reserve, he served for nearly four years with the Navy before going with Heyden. He is a member of the Chemists' Club and the Salesmen's Association of the American Chemical Industry, of which organization he is a past president.

Hart Canadian C-P-P V.P.

Ralph A. Hart, Canadian sales manager for the company since 1935, was appointed vice-president in charge of sales for Colgate-Palmolive-Peet's Canadian company late last month. He has been with Colgate since 1932, when he joined the company as a salesman in the Hamilton district. He was made district manager of Ontario in 1934 and shortly thereafter became managing director of the company's business in India. He was named sales manager for Canada in January, 1935.

F. H. Henning Dies at 58

Ferdinand H. Henning, 58, Eastern sales manager for Manhattan Soap Co., New York, died at his home in Rutherford, N. J., March 5, of a heart attack. Surviving him are a widow, the former Henrietta Mata; a son, Henry B. Henning, and a brother, Henry B. Henning.

OILS, ABSOLUTES and CONCRETES of

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A material of unusual interest to the soapmaker. Our lavandin is the result of years of experimentation — of careful cross-breeding to develop a select strain of lavandin with soft, lavender-like odor and exceptionally high ester content. This material is economical to use and provides an ideal replacement in soaps, technical preparations, sprays and other products requiring strength and fineness of odor at low cost.

GOOD NEWS for soapmakers — direct from the Lavender fields of Southern France! Excellent lavender oils, absolutes and concretes — of a quality far exceeding our fondest hopes — are now in stock and ready for immediate delivery. These materials are from our Seillans factory, the ONLY wholly-owned, American, floral extraction plant now operating on French soil. It gives us real pleasure to announce the availability of these oils and to resume actively our pre-war position as a leading supplier in this country of French lavender oils, absolutes and concretes. 'Phone, write or wire us for quotations.

LAVENDER USP XII Barrême 38-48% Ester
LAVENDER USP XII Drôme 38-42% Ester
LAVENDER USP XII 35-38% Ester
LAVENDER USP XII 30-32% Ester
ABSOLUTE LAVENDER Barrême (Green)
ABSOLUTE LAVENDER Seillans (Brown)
LAVENDER CONCRETES:
Barrême (Green), Seillans (Brown) and Seillans Colorless

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FACTORIES AT CLIFTON, N. J. AND SEILLANS (VAR) FRANCE

Andre Givaudan Visits U. S.

Andre Givaudan of L. Givaudan & Cie, S.A., Geneva, Switzerland, returned to Europe recently after

ANDRE GIVAUDAN

a three weeks stay in the United States during which time he made his headquarters with Givaudan-Delawanna, Inc., New York, American affiliate of the Geneva company. Mr. Givaudan timed his visit to New York to attend a three-day sales conference of Givaudan-Delawanna representatives from various parts of the U. S. Ralph L. Stevenson, sales manager, conducted the sales conference.

At a luncheon for Mr. Givaudan on February 18, Dr. Eric Kunz, head of Givaudan-Delawanna, outlined the war record of the firm and its plans for the future in the production of new and unusual aromatic chemical products. Mr. Givaudan, interviewed by the trade press, told of conditions in Europe where lack of coal, raw materials and transportation continue to hamper recovery. He mentioned the void left by the removal of German raw materials used so widely before the war, the acute scarcity of soap in France, Switzerland, and other parts of Europe, how helpful Latin American lemongrass, citronella, and other oils had been to manufacturers, of the sharp increase in costs to produce essential oils in Africa, Reunion, and elsewhere, that aromatic chemical prices had risen much higher in Europe than in the U. S., the importation of American aromatics by France, and promised a wide expansion in the variety of new aromatic chemical products in the near future.

Refuse Soap Fat Quota Increase

The Association of American Soap & Glycerine Producers, Inc., last month released the reply of Clinton P. Anderson, Secretary of Agriculture, to a letter written by the Soap Association to him urging an increase in fats and oils quotas for soap manufacturing. In his letter, Mr. Anderson points out that "stocks of soap fat . . . are at a record low and domestic production is hardly sufficient to meet current requirements." The Secretary of Agriculture then goes on to reveal that the Department is "reviewing the supply situation so that a decision can be made as to quotas for the second quarter. It has been and continues to be our policy," Mr. Anderson stated, "to set soap fat quotas on a realistic basis as justified by the supply position. In our judgment it would be inconsistent to set quotas which require fat in excess of our expected supply as would the entire removal of quota restrictions in the face of a short supply of fats and oils."

New England Woburn Rep.

Woburn Chemical Corp. (N. J.) Harrison, N. J., recently appointed Raw Materials Co., Boston, as its representative for the New England territory. Raw Materials will handle the complete line of Woburn fatty acids and synthetic drying oils. C. W. Bloom, for many years sales manager of Godfrey L. Cabot, Inc., Boston, is the head of Raw Materials Co.

Russell PQ Sales Manager

John C. Russell has been appointed sales manager for the Philadelphia Quartz Co. Philadelphia. He

JOHN C. RUSSELL

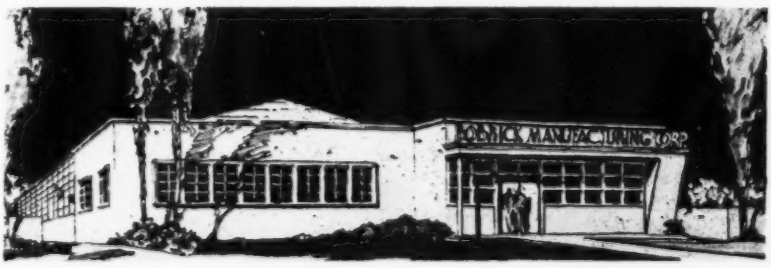
has been associated with the company since 1924 and was appointed assistant sales manager in 1942. He is also secretary and director of the PQ associate company, the American Doucil Co., manufacturers of synthetic zeolites. Other appointments by PQ include Carl F. Wolcott as manager of foreign sales and also as employment manager for the company. Russell J. Emmons has been made industrial relations manager and John H. Wills, patent manager.

Standard Synthetics Bankrupt

Standard Synthetics, Inc., New York essential oil house, recently was declared bankrupt. The first meeting of creditors was held at United States Court House, New York, February 14.

Bobrick Adding to Plant

Bobrick Mfg. Co., 2619 Santa Fe Ave., Los Angeles 11, Calif., has started construction of a new addition to their plant, to contain about 20,000 sq. ft., and to be used exclusively for production of soap and hand lotion dispensing equipment.



"The bigger the family—the better the service"

CONTINENTAL CAN COMPANY, INC.

CONTINENTAL PAPER DIVISION

FIBRE DRUMS The Container Co., Van Wert, Ohio

LIQUID-TIGHT FOOD CONTAINERS — Boothby Fibre Can Co., Roxbury, Mass.

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CONTINENTAL is a big family offering a wide variety of paper packages—liquid-tight paper containers and cups, fibre cans and drums . . . packages that safely carry your product everywhere (yes, and into every room in the house). The famous Continental Triple C trade mark stands for one company with one policy—to give you only the best in quality and service.

Tune in: "CONTINENTAL CELEBRITY CLUB" *every week over coast-to-coast CBS Network*

Soap D-12 Meeting Mar. 18-19

The Committee on Soaps and Detergents, D-12 of the American Society for Testing Materials, is meeting March 18 and 19 at the Hotel New Yorker, New York, according to an announcement by B. S. Van Zile of the Hercules Powder Co., chairman.

In a recent letter to J. R. Townsend, president of ASTM, Brig. Gen. Georges F. Foriot, QMC, Military Planning Commission, commended the work of D-12 for the Army during the war years especially for specifications and analytical methods for soaps and detergents and other technical assistance to the armed forces. Madison Sheely and F. W. Smither are mentioned by name in the commendation.

To Allocate Java Oils

Java citronella and other essential oils and produce from the Dutch East Indies, when supplies begin to arrive in the U. S., will be allocated on a basis of previous imports in 1939-41. The allocation will be handled by a committee of New York importers working in conjunction with the Netherlands Indies Trading Co. and the D. E. I. Government. Fred Thurkauf of Jacobus Frank & Co., New York, is chairman of the committee. Other members are William Schilling, Jr. of Norda Essential Oil & Chemical Co.; J. H. R. Stephenson of Aromatic Products, Inc.; A. L. Picard of Stein-Hall & Co.; L. J. M. Wezenaar of Catz American Co. It is understood the oils in question are supplies which were originally confiscated by the Japanese or stocks which were hidden away at the time of the Jap invasion. No facts regarding quantities or quality are yet available.

Soap Rosin Quotas Ended

Quota limitations on the use of rosin in soap products were ended last month by Civilian Production Administration through amendment of Order M-387. Users must continue to file quarterly consumption and inventory reports with CPA. Inventories are still limited to a "practical minimum working inventory reasonably necessary to meet deliveries."

Offer New Soapless Shampoo

Roycemore Toiletries, Inc., Chicago, manufacturers of a line of fine gift soaps, has entered the cream shampoo market with a lanolated soapless cream shampoo, bearing the name "Trellis," which retails at $1. Advertising in national women's magazines and local newspapers is being used, together with elaborate point-of-sale material to present the new product.

Givaudan Advances Prior

M. J. Prior, for some years associated with the sales office of Givaudan-Delawanna, Inc., New York, has been transferred to the outside sales staff and will cover a territory in the South and Southeastern part of the country, the company announced recently. In addition, he will service some of the accounts in the Metropolitan area and will assist in the Cincinnati office.

New All-Steel Skid

A new, all-steel, barrel and box skid was announced recently by Palmer-Shile Co., Detroit. The new skid in the eight foot length measures 14 inches wide and weighs 45 pounds. It is all welded construction.

"Nyglo" New Metal Cleaner

Art Beck Co., 6022 Blackstone Ave., Chicago 37, has added to its line of solvents and chemical specialties, a new metal and porcelain cleaner called "Nyglo," which it is claimed, "removes rust, polishes and preserves in one operation."

Mt. Hood Plans New Plant

Mt. Hood Soap Co., Portland, Ore., has recently acquired a tract of land in the Guilds Lake district of Portland on which it is planned to erect a new modern plant, according to H. Feldman, general manager. The tract which covers 8 1-3 acres is at the present time being used as a war housing project, but as soon as it becomes available to the soap firm, the new plant will be started. The company entered business in Portland over forty years ago, in 1904, manufacturing soap in a 25′ x 25′ wooden building.

Chempro Plans Campaign

Chempro Co., New York, manufacturers of "DIP" soap products, are reported to have scheduled a test newspaper and radio advertising campaign in twelve markets, it was learned recently.

Columbia Advances Neubauer

Appointment of Joseph A. Neubauer to the position of technical adviser to the Columbia Chemical division of Pittsburgh Plate Glass Co., Pittsburgh, was announced recently by the company. He will make his headquarters in the general office in Pittsburgh. A graduate of Case School of Applied Science, Mr. Neubauer has been with Columbia since 1933.

LaLande Heads Whitemarsh Labs.

Dr. W. A. LaLande, Jr., has been appointed director of Whitemarsh Research Laboratories of Pennsylvania Salt Manufacturing Co., Philadelphia, it was announced last month. Formerly director of research of Attapulgus Clay Co., Philadelphia, he was at one time a member of the chemistry faculty of the University of Pennsylvania. He has been with Pennsylvania Salt Co. since Aug., 1944. In his new post he will have charge of all activities of the new Whitemarsh Research Laboratories, excepting those of the patent division. Dr. LaLande received his undergraduate and graduate training at the University of Pennsylvania prior to spending a year at the Swiss Federal Polytechnic Institute at Zurich.

NEW TRADE MARKS

The following trade-marks were published in the February issues of the *Official Gazette* of the United States Patent Office in compliance with Section 6 of the Act of September 20, 1905, as amended March 2, 1907. Notice of opposition must be filed within thirty days of publication. As provided by Section 14, fee of ten dollars must accompany each notice of opposition.

TRADE MARK APPLICATIONS

SOLVEPINE — This in upper case, bold stencil letters for liquid soap. Filed Feb. 24, 1945 by L. Sonneborn Sons, Inc., New York. Claims use since 1920.

ZOOM — This in upper case, extra bold, jumbo letters superimposed on a circle for cleaning preparation in crystal form to be used on rugs, upholstery, clothing, and for surfaces of furniture, woodwork and walls. Filed May 2, 1945 by Danbett Products Co., Hawthorne, Calif. Claims use since Feb. 20, 1945.

200—This in bold, black figures for cleaning compound and household cleaner. Filed Aug. 4, 1945 by Rabin Co., Los Angeles. Claims use since June 27, 1945.

KLEENOMATIC — This in upper case, extra bold, black letters for soap cleanser polish. Filed June 25, 1945 by Kleen-O-Matic Products Co., New York. Claims use since June, 1930.

KK—This in upper case, extra large, extra bold, black letters for soap, soap flakes, soap chips and a cleaning preparation in finely divided form for household use. Filed by Fitzpatrick Bros., Inc., Chicago. Claims use since Nov. 10, 1942.

JUNIOR PROM—This in upper and lower case, bold letters for toilet soap. Filed Sept. 15, 1945 by Primrose House, Inc., New York. Claims use since Aug. 14, 1945.

RAIN-BO—This in upper case, bold letters on a pennant for bubble solution. Filed Sept. 15, 1945 by Virginia Maide Products, Inc., Lynchburg, Va. Claims use since Aug. 1, 1945.

STRATOSOL — This in upper case, extra bold black letters for insecticides. Filed Sept. 11, 1945 by Stratosol Corp., New York. Claims use since Aug. 2, 1945.

BACTICIDE — This in upper and lower case, bold letters for antiseptic, disinfectant, deodorant and germicide. Filed Sept. 22, 1945 by Bacticide Co., South Boston, Mass. Claims use since 1937.

"BANG"—This in upper case, bold letters for insecticides. Filed Sept. 22, 1945 by York Pharmacal Co., St. Louis. Claims use since Sept. 5, 1945.

INTOXIN — This in upper case, bold letters for insect spray. Filed Sept. 25, 1945 by Ultra Chemical Works, Inc., Paterson, N. J. Claims use since May, 1937.

ATOMIC—This in upper and lower case, extra black, bold letters for general household cleaner. Filed Aug. 24, 1945 by The Theobald Industries, Kearny, N. J. Claims use since July 28, 1945.

ATOMIX—This in upper and lower case, extra bold, black letters for general household cleaner. Filed Aug. 31, 1945 by The Theobald Industries, Kearny, N. J. Claims use since Jan. 15, 1945.

ONEXIT—This in upper case, bold letters for liquid cleaning compound for floors. Filed Sept. 17, 1945 by Hillyard Chemical Co., St. Joseph, Mo. Claims use since Sept. 13, 1945.

CHARLES OF THE RITZ—This in upper and lower case, bold letters for shampoos. Filed July 13, 1945 by Charles of the Ritz, New York. Claims use since May, 1943.

AVADERM — This in upper and lower case, bold, script letters for shampoo. Filed Aug. 13, 1945 by Lightfoot Schultz Co., New York. Claims use since July 11, 1945.

INTERDENT — This in upper case, reverse letters on an oblaid spheroid beneath the symbol for a prescription which is in a much smaller reverse sphere for tooth powder. Filed Aug. 21, 1945 by Physicians Dentifrice Co., Redwood City, Calif. Claims use since May 1, 1945.

S A 50—This in upper case, bold letters for insecticides. Filed Aug. 20, 1945 by Southern Agricultural Insecticides, Hendersonville, N.C. Claims use since 1944.

SEAFOAM — This in upper case, extra bold, black letters for bubble forming solution. Filed Oct. 5, 1945 by Harold B. Ketchum, Charlotte, N. C. Claims use since Aug. 10, 1945.

FLOOR GOLD—This in upper case, bold letters for floor wax. Filed Aug. 22, 1945 by Acme Wax Co., Fort Worth, Tex. Claims use since June 2, 1941.

PLYOWAX — This in upper case, bold letters for emulsion wax-type product in liquid form for waxing floors. Filed Sept. 17, 1945 by The Diversey Corp., Chicago. Claims use since July 11, 1944.

PRIM SUDS — This in upper case, extra bold black letters for detergent. Filed Sept. 20, 1944 by Primrose House, Inc., New York. Claims use since July 17, 1944.

LA PRIMERA CASTILE — This in upper case, open letters for soap. Filed Aug. 29, 1945 by New Brunswick Laboratories, Inc., New York. Claims use since about 1883.

DOFF — This in upper and lower, extra bold, black, jumbo letters for household cleaner and detergent. Filed Sept. 26, 1945 by Gendron Chemical Co., Los Angeles. Claims use since July 3, 1945.

INTUITION — This in upper case, bold letters for soaps, soap pastes and soap powders. Filed Sept. 26, 1945 by Roger & Gallet, New York. Claims use since Sept. 20, 1934.

AUDRENE — This in upper and lower case, bold, script letters for shampoo. Filed July 31, 1945 by Charles Benjamin Lang, Paterson, N. J. Claims use since May 5, 1945.

TORMENT DUST — This in upper case letters for insecticides. Filed Sept. 17, 1945 by Ade B. Williams,

Orlando, Fla. Claims use since Dec. 5, 1938.

Trade Marks Granted

417,631. Shoe soap and boot polish. Filed by Silverite Gutterman Co., Boston, Apr. 24, 1945. Serial No. 482,556. Published Aug. 21, 1945. Class 4.

417,832. Compounds for cleaning and polishing metals. Filed by Turco Products Co., Inc., Los Angeles. June 21, 1944. Serial No. 471,499. Published Sept. 11, 1945. Class 4.

471,835. Liquid hand cleaner. Filed by Remington Rand, Inc., Buffalo, July 28, 1944. Serial No. 472,714. Published Sept. 4, 1945. Class 4.

417,863. Soaps. Filed by S. S. Kress and Co., New York, Jan. 31, 1945. Serial No. 241. Published Sept. 4, 1945. Class 4.

417,867. Spray oil and polish for use on floors, furniture and woodwork. Filed by C-Z Chemical Co., Beloit, Wis., Feb. 14 ,1945. Serial No. 479,770. Published Sept. 11, 1945. Class 16.

418,128. Floor and furniture polishing wax. Filed by Industrial Raw Materials Co., New York, May 25, 1945. Serial No. 483,756. Published Sept. 18, 1945. Class 16.

418,131. Brushless shave cream and shave soap. Filed by Garay Toiletries, Inc., New York, May 30, 1945. Serial No. 483,967. Published Sept. 25, 1945. Class 4.

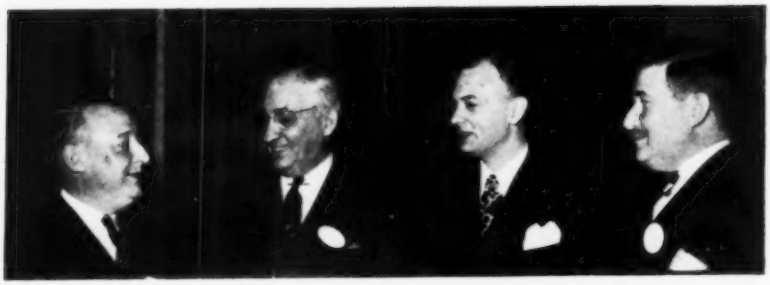
418,207. Insecticide. Filed by Garden Products Co., St. Louis, Oct. 21, 1944. Serial No. 475,584. Published Sept. 18, 1945. Class 6.

418,217. Liquid preparation for rendering fabrics moth repellent. Filed by John M. Cain, Hartford, Conn., Jan. 3, 1945. Serial No. 478,174. Published Sept. 25, 1945. Class 6.

418,219. Soot remover. Filed by Standard Chemical Co., Natick, Mass., Jan. 26, 1945. Serial No. 479,093. Published Sept. 25, 1945. Class 6.

418,223. Insect repellent. Filed by John Hudson Moore, Inc., New York, Feb. 9, 1945. Serial No. 479,636. Published Sept. 25, 1945. Class 6.

418,241. Shampoo. Filed by Lawrence Laboratories, Brooklyn, Apr. 13, 1945. Serial No. 482,108. Published Sept. 18, 1945. Class 6.



Chicago Drug & Chemical Association heard Dr. Austin Smith, Secretary of the Council of Pharmacy and Chemistry of the American Medical Assn. at recent luncheon meeting at Drake Hotel. Shown here are Harry Dunning of Albert Verley & Co., president, Dale Ruedig of Eli Lilly & Co., vice-president Dr. Smith, and Edgar Brand of L. Sonneborn Sons, Inc. meeting chairman. George Liddell of Magnus, Mabee & Reynard, Inc. was NOT present. Tal Tribble represented MM&R that day. But in drawing for the $50 cash door prize, George's name was picked—but you had to be present to win. Frustrated George, they now call him in Chi!

418,259. General antiseptic and germicide. Filed by Medicinal Products Co., Philadelphia, May 22, 1945. Serial No. 483,659. Published Sept. 25, 1945. Class 6.

418,288. Preparation for exterminating rats and mice. Filed by Dixie Disinfecting Co., Dallas, June 13, 1945. Serial No. 484,486. Published Sept. 25, 1945. Class 6.

418,328. Paste or semi paste leather polish. Filed by K. J. Quinn & Co., Boston, June 20, 1944. Serial No. 471,458. Published Oct. 9, 1945. Class 4.

418,337. Shampoo. Filed by M. Louis Products Co., New York, Nov. 15, 1944. Serial No. 476,477. Published Oct. 2, 1945. Class 6.

418,363. Liquid cleaner and stain remover. Filed by Globe Disinfecting Co., New York, Apr. 28, 1945. Serial No. 482,739. Published Oct. 2, 1945. Class 4.

418,366. Dry cleaner, cloth cleaner, hat cleaner, glove cleaner and handbag cleaner. Filed by Wilco Co., Los Angeles, May 1, 1945. Serial No. 482,861. Published Oct. 9, 1945. Class 4.

418,369. Drain cleaners of the water activated type. Filed by H. R. Basford Co., San Francisco, May 14, 1945. Serial No. 483,300. Published Oct. 9, 1945. Class 23.

418,373. Soapless detergent. Filed by F-R Cop., New York, May 15, 1945. Serial No. 483,368. Published Oct. 9, 1945. Class 4.

418,376. Soapless cleaning compound. Filed by Dir-Kleen Co., Chicago, May 21, 1945. Serial No. 483,609. Published Oct. 9, 1945. Class 4.

418,382. Protective floor coatings in liquid form. Filed by Tremco Manufacturing Co., Cleveland, June 1, 1945. Serial No. 484,067. Published Oct. 2, 1945. Class 16.

418,392. Shampoo. Filed by Kartine Co., Glendale, Calif., June 11, 1945. Serial No. 484,408. Published Oct. 9, 1945. Class 6.

418,400. Hand cleaner. Filed by Harold Englehart, Akron, O., June 21, 1945. Serial No. 484,834. Published Oct. 9, 1945. Class 4.

418,500. Bubble bath. Filed by Mem Co., New York, Mar. 30, 1944. Serial No. 468,847. Published Feb. 13, 1945. Class 6.

418,519. Shampoo. Filed by Raymond Laboratories, Inc., St. Paul, Minn., Feb. 28, 1945. Serial No. 480,348. Published Oct. 16, 1945. Class 6.

418,523. Shampoo. Filed by Bristol-Myers Co., New York, Mar. 30, 1945. Serial No. 481,520. Published Oct. 16, 1945. Class 6.

418,524. Adhesive rat boards. Filed by Edward Fliegel, Brooklyn, Apr. 2, 1945. Serial No. 481,623. Published Oct. 2, 1945. Class 50.

418,709. Dentifrices. Filed by Lever Brothers Co., Cambridge, Mass., Mar. 21, 1945. Serial No. 481,149. Published Oct. 23, 1945. Class 6.

418,754. Shampoos. Filed by Granville Laboratories, Chicago, May 23, 1945. Serial No. 483,686. Published Oct. 23, 1945. Class 6.

Laundry Owners Hear Hall

J. Stanley Hall, manager of sales, laundry and dry cleaning division, Pennsylvania Salt Manufacturing Co., Philadelphia, was one of the speakers at the first post-war meeting of the Atlantic City Institutional Laundry Owners Assn., held recently in Atlantic City, at the Marlborough Blenheim Hotel. He spoke on soap builders and laundry sours. Mr. Hall's talk was followed by a demonstration of chemicals used in the manufacturing of products for the laundry industry by Edwin S. Garverich, a Pennsylvania Salt chemist.

Called Champion Fat Salvager

Mrs. James H. O'Shea, 72-year-old Chicago housewife, has been acclaimed that city's champion fat saver in the fat salvage campaign. In one month due to Mrs. O'Shea's efforts, 9,000 pounds of waste fats were turned in by her neighbors in the north side community where she resides. In recognition of her achievements she recently received the Chicago War Service Corp's highest service stripe award.

Edwards Organizes Own Company

Frank J. Edwards, who has been in the chemical industry for over 25 years, formerly with Grasselli and Du Pont, and more recently with Philipp Bros., has announced the formation of Frank J. Edwards Co., with offices at 15 William St., New York, for the distribution of chemicals for import, export and domestic use. Offices in other manufacturing centers will be opened shortly, according to the announcement. At present, arrangements are being made to provide warehousing facilities in these areas.

Milano Rejoins Millmaster

Capt. Robert J. Milano, AUS, of Millmaster Chemical Co., New York, recently returned to his post as head of the firm, after serving in the army since June, 1942. On terminal leave until Feb. 24, Capt. Milano's last assignment was with the chemical commodity division of Chemical Warfare Service, New York. He was called into service as a private, and was graduated from Officers' Candidate School in Dec., 1942. Before serving in New York, he was attached to CWS in San Francisco.

New retail-size cartons for Modart Fluff shampoo, product of LaMaur Products, Inc., Minneapolis, employ full color kodachrome reproductions as the dominant design theme. The shampoo comes in three odors, gardenia, apple blossom and pine. Photography and design of the cartons was by Ben Larson, art director for McCann-Erickson, in Minneapolis.

Monsanto Advances Luckett

Forrest M. Luckett, special products salesman for Monsanto Chemical Co., St. Louis, in the Chicago office, has been appointed branch manager of the Organic Chemicals division office of the company, in Cincinnati, it was announced recently. His territory includes southern Ohio, northern Kentucky and part of West Virginia. Mr. Luckett has been associated with Monsanto since 1924, when he joined the service departments. He has worked in the Chicago office as a special products salesman since 1937.

Victor Acquires Phosphorus Site

Acquisition of a site for the new two million dollar elemental phosphorus producing plant at Tarpon Springs, near Tampa, Fla., was announced recently by Victor Chemical Works, Chicago. The plant, on which construction will begin as soon as contracts are let and materials are available, will be the largest elemental phosphorus producing unit in the world, according to reports. The tidewater property in western Florida where the plant is to be located is said by a company spokesman to possess the richest phosphate rock fields in the world.

Bulletin on Glycerine

The U. S. Department of Commerce has just released a new bulletin on gylcerine, giving statistics on end uses, exports, imports, etc. Copies are available through C. C. Concannon, chief of the Chemical Unit.

Owens-Illinois Men Advanced

Arthur Kohl has been named manager of the Household and Chemical Products division, and W. M. Robertson as manager of the Pharmaceutical and Proprietary division of Owens-Illinois Glass Co., Toledo, the company announced late last month. Both men have been with the company for more than 20 years. Mr. Kohl has been manager of the Corrugated Package Sales division since 1929. Mr. Robertson was acting manager of the division which he has just been appointed to head during the time Eugene F. Bertrand, sales manager of the Drug and Chemical Industries division, served with the War Production Board in Washington.

CD&CA Hears Fishbein

Dr. Morris Fishbein, editor of the Journal of the American Medical Association and of *Hygeia* — The Health Magazine, was the guest speaker at a recent luncheon meeting of the Chicago Drug and Chemical Association. Dr. Fishbein spoke on "Postwar Medicine."

FOR QUALITY BUBBLE BATH FORMULATION

MIRANOL-OH — NEW SYNTHETIC BASE

CLEAR, SPARKLING PRODUCTS, NO FILTERING

EASY TO FORMULATE

Appearance	**Clear viscous amber liquid**
Character	**Cationic surface active agent**
Chemical Structure	**Fatty Acid Amido Azoline Hydroxy Acetate**
pH 1% Solution	**6.9**
Solubility	**Instantly in hot or cold water**
Stability	**Acid, neutral and alkaline solutions**
Solution Characteristics	**Instant profuse foam**
Concentration	**45%**

MIRANOL OH (Patent Applied For) is a cationactive wetting agent and detergent, stable in the presence of acids, alkalis, and electrolytes. MIRANOL OH solutions show profuse foaming characteristics, fast wetting, and excellent detergency.

Bubble bath formulated with MIRANOL OH not only excels in foaming qualities and clarity, but has the unique property of actually softening the skin, especially when soap is used in the bath. The cationic nature of MIRANOL OH makes it superior to other bubble bath compounds which are usually formulated with anionic synthetic detergents. The emollient as well as the perfume clinging effect is so pronounced that a simple trial of washing the hands with soap in a dilute solution of MIRANOL OH is convincing.

Sparkling clear bubble bath may be formulated with MIRANOL OH without requiring filteration. Trials should be conducted to determine whether the perfume intended for use is clearly soluble in Propylene Glycol or in 2-4 Methyl-2 Pentanediol. Care must be exercised in selecting perfume and color to be used with MIRANOL OH. The perfumes should not contain any free acid groups such as carboxyl, sulfonic, phosphonic, or similar groups, nor their salts; since MIRANOL OH will react with them, resulting in turbid products. Esters or other reacted acid groups are without danger. Most perfumes fill these requirements. Dyestuffs require closer examination; but where only minute amounts of dyestuffs are used, a reaction with MIRANOL OH may be discounted. The following formulation is suggested:

2 parts perfume

20 parts Pentanediol and/or Propylene Glycol

50 parts MIRANOL OH

Add water to desired concentration

WRITE FOR FREE SAMPLE, PRICE, NAME OF NEAREST DISTRIBUTOR

THE MIRANOL CHEMICAL COMPANY, INC.

MANUFACTURERS OF SYNTHETIC ORGANIC DETERGENTS

16 MELVILLE PLACE **IRVINGTON 11, NEW JERSEY**

In Canada — CHARLES ALBERT SMITH, LTD., 123 LIBERTY ST., TORONTO 1, ONT.

BIDS AND AWARDS

Aerosol Award to Cyanamid

American Cyanamid & Chemical Corp., New York, submitted the low bid of $1, which was accepted, on an unspecified quantity of aerosol in a recent opening for miscellaneous supplies by the Philadelphia Naval Base, Philadelphia. Other bidders and their bids included Fischer Scientific Co., Pittsburgh, $2.25 a pound; Eimer & Amend, New York, $2.25 a pound and Williams, Brown & Earle, Philadelphia, $2 a pound.

Carbon Tet. Bids

The following bids were received on 200 gallons of barbon tetrachloride in a recent opening for miscellaneous supplies by the Philadelphia Naval Base, Phiiladelphia: Globe Solvents, Philadelphia, 89.5 cents a gallon; Crystal Soap & Chemical Co., Philadelphia, $1.07; A. C. Fergusson Co., Philadelphia, $1.07 plus 46 cents for 40 containers; R. M. Hollingshead Corp., Camden, N. J., $1.50 and Industrial Distributors, New York, $1.15.

Misc. Treasury Dept. Bids

The following bids were received on item 51D-392, 660 gallons of disinfectant, and item 51N-115, 1,000 gallons of naphthalene, in a recent opening for miscellaneous supplies by the Treasury Department, Procurement Division, Washington, D. C.: Crystal Soap & Chemical Co., Philadelphia, item 51D-392, alternate A, $1 a gallon and alternate B, $1.70 a gallon; B. R. Elk & Co., Garfield, N. J., item 51N-115, 10 cents a pound; Alex. F. Fergusson Co., Philadelphia, item 51D-392, 74 cents a gallon, 51N-115; 9.7 cents in one pound boxes and 9 cents per pound in 10 pound cartons; Gibson-Stewart Corp., Cleveland, item 51D-392, 75 cents a gallon; R. M. Hollingshead Corp., Camden, N. J., item 51D-392, 90 cents a gallon; Jas. Huggins & Son, Malden, Mass., item 51D-392, 68 cents a gallon; Napthalene Products Co., Tarrant, Ala., item 51N-115, 12.5 cents a pound, 52 cartons per case; Reilly Tar & Chemical Corp., Newark, N. J., item 51N-115, 9.24 cents per pound; Reliable Chemical Co., Passaic, N. J., item 51N-115, 11 cents a pound and West Disinfecting Co., Long Island City, N. Y., item 51D-392, $1.65 a gallon.

P.O. Hand Soap Bid

Unity Sanitary Supply Co., New York, submitted the only bid on 15,000 cakes of grit hand soap in a recent opening for miscellaneous supplies by the Post Office Department, Washington, D. C. Unity's bid was 6 cents each.

GPO Liquid Soap Bids

In a recent opening for miscellaneous supplies by the U. S. Government Printing Office, Washington, D. C., the following bids were received on 4,400 gallons of liquid soap: Goulard & Olena, New York, 52 cents; Industrial Chemical Specialties Co., Philadelphia, 44c; Harley Soap Co., Philadelphia, 31 cents; Lanair Chemical Corp., Chicago, 33.5 cents; James Good Co., Philadelphia, 42 cents; Trio Chemical Works, Brooklyn, 30.5 cents and Chemical Service Co., Baltimore, 58 cents.

Westinghouse Insecticide Bid

Westinghouse Electric Corp., Pittsburgh, submitted the only bid, $225, on an unspecified quantity of insecticide in a recent opening for miscellaneous supplies by the Federal Works Agency, Public Buildings Administration, Office of Buildings Management, Washington, D. C.

Misc. Treasury Soap Bids

The following bids were received in a recent opening for miscellaneous supplies by the U. S. Treasury Department, Procurement division, Washington, D. C., on: item 51S-1674-10, 3,600 pounds of laundry soap; item 51S-1730, 28,800 pounds of soap powder; and item 51S-1750, 20,000 pounds of soap powder. American Soap & Washoline Co., Cohoes, N. Y., item 15S-1674-10, 15.74 cents; Detergent Products Co., Chicago, item 51S-1750, 4.25 cents; E. F. Drew & Co., New York, item 51S-1750, 5.5 cents; Hunnewell Soap Co., Cincinnati, item 51S-1750, 6 cents; Lava Co. of America, Milwaukee, item 51S-1674-10, 17.5 cents, and item 51S-1730, 17.5 cents; Mackenzie Labs., Chester, Pa., item 51S-1750, 5.6 cents; Wm. Messer Corp., New York, item 51S-1730, 7.98 cents and item 51S-1750, 7 cents and Western Chemical & Manufacturing Co., Chicago, item 51S-1750, 4.25 cents.

Treasury Shaving Soap Bids

Among the bids received on 800 pounds of shaving soap in a recent opening for miscellaneous supplies by the U. S. Treasury Department, Procurement division, Washington, D. C., were those of: Wm. Messer Corp., New York, 31.7 cents; Unity Sanitary Supply Co., New York, 32 cents and J. B. Williams Co., Glastonbury, Conn., 35.28 cents.

Treasury Paste Soap Bids

The following bids were received on 12,000 pounds of paste soap in a recent opening for miscellaneous supplies by the Treasury Department, Procurement division, Washington, D. C.: Crystal Soap & Chemical Co., Philadelphia, 12 cents; E. F. Drew & Co., New York, 7.74 cents; Eastern Chemical Co., Baltimore, 10.58 cents; Harley Soap Co., Philadelphia, 6.9 cents; R. M. Hollingshead Corp., Camden, N. J., 12.5 cents; Peck's Products Co., St. Louis, 8.5 cents; Western Chemical & Manufacturing Co., Chicago, 6.9 cents and Wm. Messer Corp., New York, 8.45 cents.

Economics Lab. Warehouse Plan

Economics Laboratory, Inc., St. Paul, received publicity in the December issue of *Distribution Age*, a journal for warehousemen, where the company's use of rental warehouse space for manufacturing and office purposes was described. How the plan has enabled the company to cut overhead and enjoy many operating advantages at low cost was explained.

RAW MATERIAL MARKETS

As of **March 8, 1946**

RELIEF from the current shortages of supplies of soap fats is now not expected until some time in 1947. With a world shortage of fats and oils, and U. S. domestic production expected to be about the same this year as last, any hope for relief has now been pushed farther into the future. Originally it was thought imports of oils and oil producing materials might supplement domestic production to the point where relief from a shortage could be anticipated some time this year.

There will be increased quantities of coconut oil and copra coming into the United States from the main producing areas—the Philippines, Ceylon and the Malay peninsula—but the amount will be nowhere near normal. Estimates of the total production from these areas now are fixed at around 30 per cent of normal. And, of this, a percentage, some think most, will be shipped to Europe. Another source from which relief might have come is Africa, with its palm and palm kernel oil. Normally Africa supplies 50 per cent of the world's palm oil and 95 per cent of its palm kernel oil. Now, however, with a world shortage of fats and oils, increased demands, and major producing areas: the East Indies and Malay not heard from, Africa, by itself, doesn't hold out too much hope for relief.

U. S. domestic production of fats and oils will be about the same as in 1945. However, against this must be measured increased demand from several quarters. In 1945, according to Department of Agriculture figures, 9.7 billion pounds of fats and oils were consumed by the U. S. Even with a drop in per capita consumption for both food and non-food purposes, as compared with pre-war years, the demand will exceed the supply. One reason why the 1946 supply will be slightly larger or about the same as in 1945 is the fact that lard production will show an increase. Corn, cottonseed, peanut and soybean oils will be in about the same supply position as last year. Domestic olive oil production is due to decline in 1946, as is that of the Mediterranean area, incidentally. Speaking of olive oil, it was recently announced that 3,000 metric tons of soybean oil from the U. S. will be allocated for export to Greece in exchange for a similar quantity of Greek olive oil. It is understood that the Greek government will issue export permits to normal

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olive oil exporters and prices will be such as to permit importation into the U. S. within the price ceilings established by the OPA.

In discussing imports of various supplies of soap fats, the Bureau of Agricultural Economics of the U.S.D.A. recently pointed out that only 15 million pounds, oil equivalent, of copra were brought in from the Philippine Islands in 1945. Although it is expected that greater amounts of copra will be coming into the U. S. in 1946, the figure is not expected to amount to more than one-half the 1937-41 average of 700 million pounds, in terms of oil.

Meat production under Federal inspection for the week ended March 2, totaled 327 million pounds, according to a U.S.D.A. Meat Board report, of which hog slaughter was estimated at 1,088,000 head. This was 13 per cent above slaughter during the preceding week, and 35 per cent more than the 806,000 for the corresponding week in 1945. A measure to increase the current set-aside of lard and its extension to additional states was announced recently. The measure requires lard set-aside to be increased from three and one-half to five per cent of the live hog weights.

Reports are current in the soap trade that the House Small Business Committee may shortly order an open hearing in Washington to take testimony on charges by some elements in the industry that WFO 42-b has been unfairly administered and that the fat and oil supply situation is not as serious as WFA reports have indicated. As we go to press, no date has been set for any such hearing.

Removal of consuming quotas and inventory limitations on rosin early in February by the Civilian Production Administration may have to be rescinded and controls reinstituted because of record low stocks and greatly expanded demands. Two factors that may necessitate restoration of an allocation system on rosin are the size of the demand for rosin, growing out of the building program for the country, export quotas for the naval stores year April 1, 1946, to March 31, 1947 and the extent of increased demands for rosin in the paper and other consuming industries.

The scarcity of coal tar chemicals has been further aggravated recently by the shutdown of a large section of the steel industry. With such coal tar chemicals as naphthalene, cresylic acid, phenol and benzol short anyway, the closing down of steel plants makes the situation just that much worse. A gradual return to normal that will require from two to six weeks will naturally improve the situation, but not before shortages verging on the acute have been felt.

On essential oils there were a few developments of interest during the month. One concerned the United States Customs Court, which recently upheld the free entry of citronella oil from Ceylon. It is understood the government is going to exercise its right to appeal the decision. Small arrivals of Bois de Rose oil, and the arrival of fresh lots of bergamot oil were said to have come in during the month.

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PRODUCTION SECTION

Fatty Acids in Potash Soaps

By DALE V. STINGLEY*
Armour & Company

JUST how much thought the soap industry has given to the advantages of fatty acids beyond the fact that they were a source of fat to keep their plants going, I do not know, because during the war costs were often not considered. But certainly it has never had a better opportunity to evaluate them. During the past few years many wartime regulations either directly or indirectly gave the potash soap manufacturer no choice but to use fatty acids. As a result of this, his greatest hardship was usually where to get fatty acids, and this has been a problem for many other users as well because it was a physical impossibility for the fatty acid industry to meet all the wartime demands placed upon it. The fatty acid situation is still tight, but production is showing improvement as new equipment and needed replacements eliminate plant bottlenecks. This does not mean that fatty acids will be plentiful in the near future, because it takes more than fatty acid equipment to correct a serious worldwide shortage of fats and oils for the raw materials from which fatty acids are made are fats and oils.

However, to get to the subject of fatty acids in potash soap, there are many factors which must be considered in determining whether or not it is advantageous to use fatty acids and since it is almost always a question of whether fatty acids or whole fats and oils will be used, the problem narrows itself down to a comparison of the advantages and disadvantages of fatty acids versus fats and oils.

In our opinion, the major factors to be considered can be outlined as follows:

(1) Market price of fatty acids versus fats and oils.

(2) Soap yields of fatty acids versus fats and oils.

(3) Processing time of fatty acids versus fats and oils.

(4) Control of finished soap made with fatty acids versus fats and oils.

There are other less tangible benefits which could be considered since fatty acids make is possible for a potash soap manufacturer to produce a much wider line of products with little if any additional equipment, but for the present, discussion of the four factors enumerated above are most significant.

It is possible to draw up a simple chart comparing the cost of soap made with fatty acids versus fats and oils, but this, to be exact, would have to be drawn up separately for individual operators since in it must be incorporated labor, overhead, and other costs which are not necessarily constant for all firms.

Comparisons of raw material costs can be made easily, as for example, soybean fatty acid versus soybean oil. In this case eighty-eight pounds of fatty acid will produce one hundred pounds of anhydrous soap (100 lbs. F.A. = 113.5 lbs. KOH soap) while ninety-two pounds of soybean oil are required (100 lbs. oil = 108.5 lbs. KOH soap). Therefore, to determine the comparative value of soybean fatty acid versus soybean oil we apply the factor 88/92 times the price of fatty acids to determine the price oil should be to produce soap at the same raw material cost.

Soybean fatty acid at the current price of 11 cents per pound in tank cars is equivalent to 10½-cent soybean oil (88/92 x 11 = 10/52). This comparison, though gives only part of the picture since it does not consider other major factors involved. Labor and overhead, which are a substantial portion of costs, are generally based on the hours of labor and the number of hours equipment is used. In an eight hour day two and often three batches of fatty acid soap may be produced. Say three hours per batch on the average. Oils take longer. Generally it is not possible to finish two batches in less than ten hours, or five hours per batch.

Taking some figures for labor and overhead out of the air, for comparative purposes only we can figure the cost of a 50 per cent potash jell soap made from fatty acids versus oil at the same price level.

Soybeat Fatty Acid 44# @ 11c...	$4.84
Caustic Potash 8.8# @ 7c.....	.62
Labor 3 hrs. @ $1.00 (5000# batch)	.06
Overhead 3 hrs @ $1.50 (5000# batch)	.09
Total Cost cwt.....	$5.61

* * *

Soybean Oil 46#@ 11c.....	$5.06
Caustic Potash 2.8# @ 7c.....	.62
Labor 5 hrs. @ $1.00 (5000# batch)	.10
Overhead 5 hrs. @ $1.50 (5000# batch)	.15
	$5.93

* Address before Potash Soap Division, Association of American Soap & Glycerine Producers, New York, Jan. 10, 1946.

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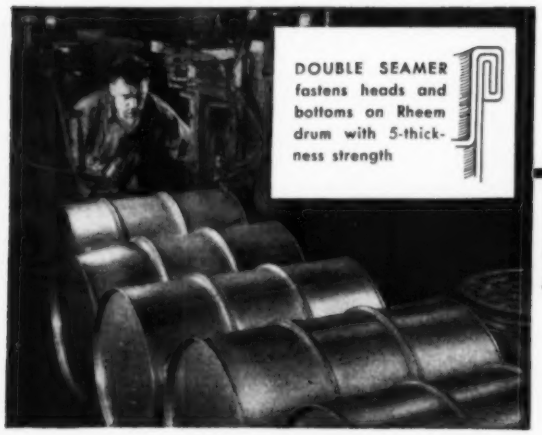

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A savings of $0.32 per cwt. by the use of fatty acids amounts to $16.00 on a 5000 pound crutcher and in the face of this, fatty acids at the same price as oils are worth money to any potash soap manufacturer.

Most potash soap manufacturers who sell a soap with 50 per cent potash soap content actually give soap away since they play safe and finish their soap on the high side, sometimes as much as 1 or 2 per cent. Others simply guess at the soap content of their products, but users of fatty acids find it a very easy matter to control their finished soap content by a simple titration to determine the amount of water, caustic or additional fatty acids to add.

The example we have given was based on the use of fatty acids in a 50 per cent jell soap where the major part of the processing time is taken up in clearing the soap. If we consider liquid soaps the crutcher time need not be more than the time it takes to fill the crutcher with hot water, run in fatty acids, neutralize with caustic and empty the crutcher. Where equipment is at a premium, fatty acids step up capacity, in some cases unbelievably. I have been told quite reliably that during the war one manufacturer turned out millions of pounds of a granulated type soap for government contracts by the use of fatty acids with only two crutchers. Mixing time in the crutchers was reduced to only four minutes, which is entirely possible since fatty acids saponify instantly.

Aside from the cost angle, another valuable advantage of fatty acids is that they offer the soap maker a wide choice of raw materials for special products, and this applies both to the fatty radical and to the alkali used in saponification. Triethanolamine, ammonia, calcium, magnesium and other mild alkalis, as well as caustic potash and caustic soda, react rapidly with fatty acids. This is of real importance to the potash soap manufacturer who wishes to make special products such as dry-cleaning soaps, shampoos, lubricants, wire drawing soaps, etc.

The fatty radical, as we all know in these days of coconut oil scarcity, has a lot to do with the properties of a finished soap and so far we have considered fatty acids as equivalent only to fats and oils in their general properties. This is true if we think of mixed fatty acids such as soyeban, corn oil, linseed, coconut, cottonseed, etc., but there are also available fractionated fatty acids which make possible entirely new types of soap. Fractionated fatty acids do not necessarily mean pure fatty acids or those containing essentially one component, since the fractional distillation process can and is used to produce controlled mixtures of fatty acids often more valuable in the soap field than pure acids or the original natural mixtures. This fact is easily understood since the soap industry commonly uses coconut oil to promote sudsing at low temperatures and adds tallow to withstand higher temperatures and modify the undesirable characteristics of coconut oil alone.

Fractionated acids such as Neo-Fat 3 and Neo-Fat 3-R containing oleic and linoleic acid and Neo-Fat S-142 and Neo-Fat D142 fractionated from tall oil and containing the same acids plus a small amount of rosin acids have made it possible to supplement coconut oil in producing liquid soaps as well as making top quality jell soaps. Pure acids such as lauric, myristic, palmitic and stearic acids, each with its own unique set of properties, are being used either alone or with other fatty acids or oils to manufacture special products in both the retail and industrial fields to meet unusual or critical requirements. Some of these special acids are no higher in price than standard mixed fatty acids, although at the present time a few are not available because the fatty acid manufacturer cannot get the necessary raw materials. However, as times improve, they will be available again and their advantages will be even greater in a highly competitive market where quality is an important factor.

Questions Answered by Mr. Stingley following delivery of his paper:

Q. Can fatty acids and rosins be used together? *A.* Yes, it is no different than using rosin with ordinary oil. Rosin, of course, is a type of acid; so it saponifies quite readily.

Q. How would you test a liquid soap using fatty acids to see if it were completely saponified? *A.* I covered that to a certain extent in the paper. With fatty acids it is usually a matter of using a test indicator because the fatty acids saponify completely. With liquid soap made from fats and oils, the problem is more difficult because these are harder to saponify. An easy test would be merely to dissolve your liquid soap in warm water. Let it set to see if it goes clear. If it remains cloudy it is not saponified completely.

Q. Can pearl ash be used to saponify fatty acids? *A.* Yes, there is no reason why it cannot be used because fatty acids will react with any alkaline material. It would cost more, however. I would not advise it.

Q. What special equipment is needed to use and store fatty acids? *A.* You can store fatty acids in a great many types of containers. Aluminum or stainless tanks are best. Wooden tanks and steel tanks which have been given special linings are good, also lead tanks. Tanks are necessary only if you buy fatty acids in tank cars. Of course, the drums that they come in are lined so that they may be stored in the drums. Most of the lacquer used in lining these drums will stand up pretty good against potash soap—not liquid soaps, but potash jell soaps. This is an advantage if you want to reuse your drums, because fatty acids are generally sold with drums included.

Q. How does the quality of fatty acids soap compare with one made from fats and oils? *A.* In general, a fatty acid soap is slightly better than one made from fats and oils. You may not agree with that. Fatty acids are easily saponifiable but with fats and oils you generally have unsaponified material, and this soap would probably go rancid much sooner than one from fatty acids. I would recommend using some kind of soap stabilizer (anti-oxidant) for both fatty acids and fats and oils. A potash soap with usually a high concentration of moisture will go rancid quicker than your chips, flakes, etc.

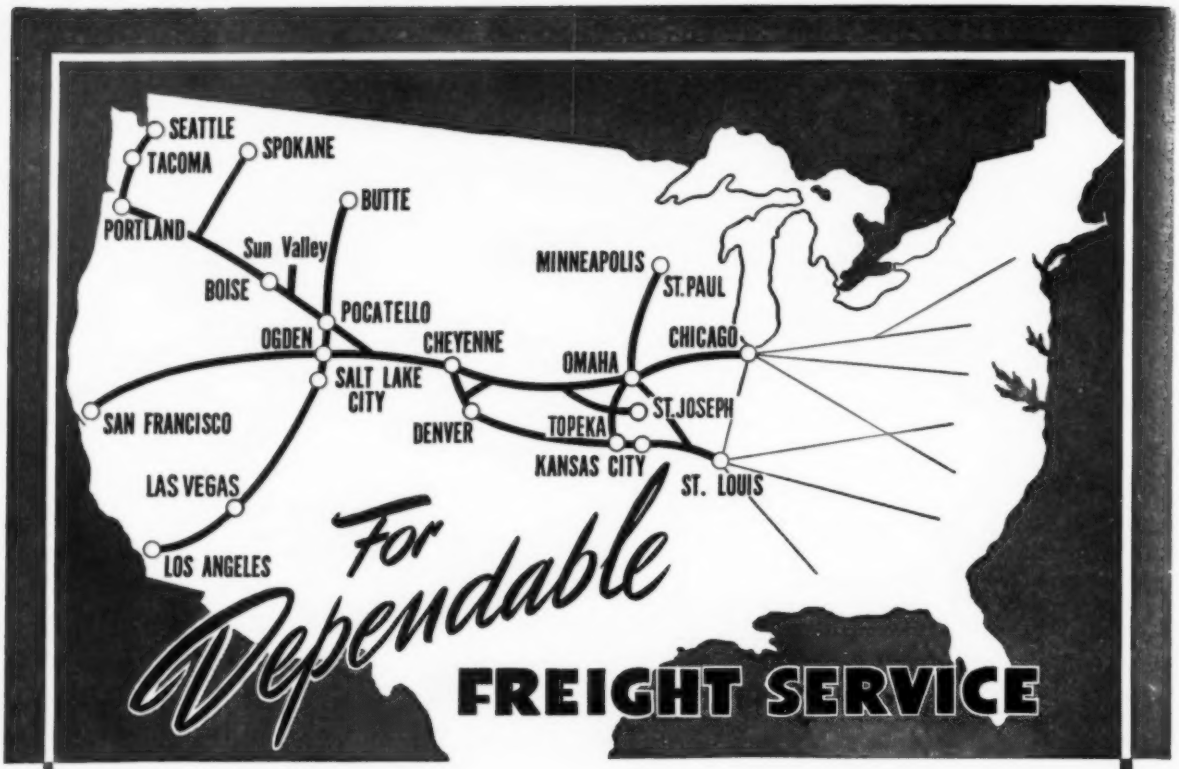
Q. Is the consistency of fatty acid and whole oil soaps the same? *A.* For the same concentration, fatty acids will give you a little stiffer soap. It is generally close, but with a little advantage on the fatty acid side.

Q. What do you get when you order coconut oil fatty acids? *A.* You don't get anything right now, because they are not available.

Q. I mean, when the order reads that you are getting all the fatty acids out of coconut oil. *A.* If you are buying real honest-to-goodness coconut oil fatty acids, you will get almost all of the fatty acids contained in the original oil except that portion of lower volatile fatty acids lost in the processing of the oil. This, however, is no disadvantage to the soapmaker.

Q. Does this reduce the amount of stearic and palmitic acids? *A.* No, they come over just the same.

Q. Is it true that most of the fatty acids are derived from soap stocks that come from caustic refining of fats and oils and that because of that, you can



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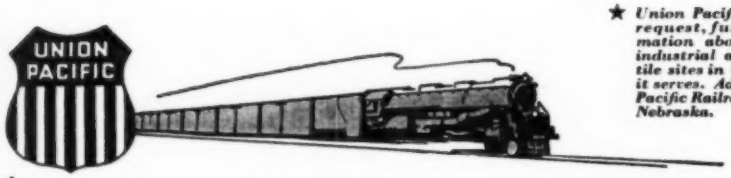

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expect that the fatty acids distilled from the split of such soap stocks will run high in unsaponifiables? *A.* Speaking for our company, I don't believe you will find the unsaponifiable any higher. It can be stripped out in the distillation operation.

Q. Do you consider coconut fatty acids as pure as you can make them? Is there a tendency to darken in a potash soap? *A.* Not if they are properly prepared and handled. Many fatty acids if improperly handled will oxidize.

Q. But darker than the pure oil? *A.* Fatty acids may be darker.

Q. Are fatty acids more nearly completely saponified with potash than sodium? *A.* There is no difference.

Q. Is it a hindrance to saponification to put salt in? *A.* No, I do not see that a small amount of salt should cause any difficulty at all in the saponification of the fatty acids.

Q. You gave the impression that in fatty acids you have less unsaponifiable. What happens to it? *A.* That is stripped out in the distillation process.

Q. What do you use normally for distillation? *A.* Vacuum distillation.

Q. We get fatty acids that are quite dirty on occasion. What is the cause of this? Where does this unsaponifiable material come from? They are dark in color, and give us more material to filter out. *A.* This depends upon the type of processing that these have gone through entirely. A lot of fatty acids are twice distilled in order to remove certain material that you don't want. A lot of fatty acid is being made today in your old-fashioned cast iron pot stills which never did a decent job of distillation. The modern fatty acid industry is only 10 years or so old. They are really putting out entirely different materials from those produced before the new equipment was invented.

Q. We have had fatty acid with lime in it. *A.* This sounds as though you are not buying distilled fatty acids. Someone might be using it in their splitting operation. I really wouldn't know. I would have to know the type of operation it had gone through.

Q. Isn't there a tendency for the iodine number to be a little bit greater for the fatty acid than the original oil? *A.* There is a very simple explanation of that, your molecular weight is different. Take for example pure oleic acid will have a higher iodine value than triolein. Fatty acids have a higher saponification value than the oil from which they are derived because you have removed the glycerine and replaced it by water. This is also true of the iodine value.

Q. Do fatty acids universally have 3 points difference in the iodine value than the oils from which they are derived? *A.* There is a slight tendency for the iodine value on fatty acids to be higher because of your change in molecular weight.

Q. Would it be as great as 3 points? *A.* No, you probably ran into contamination.

Q. Original oil is usually straw color and the fatty acids derived from it are of a darker color (dark amber). We have never gotten a light color from the fatty acids. Must they always be a great deal darker. (N.B.—This question refers to split fatty acids, not distilled.) *A.* That depends entirely on the splitting process used. I have seen perfectly light oils going in come out black. Even going through a high pressure splitter there is some tendency to darken. The fatty acids manufacturer doesn't worry too much about that because he is going to distill the split product. If it was split by a regular fatty acid operator they are generally running a variety of products, some of them quite dark and it might be contamination.

Q. In the making of fatty acids would you prefer to take the neutral oils rather than an oil with 10 or 12 per cent acid? Would you get a better fatty acid? *A.* No.

Q. What is the difference approximately, thinking in terms of liquid soaps, of a soap made from fatty acids as compared to one made especially from neutral oils in terms of anhydrous content. How high an anhydrous can you make a liquid soap without danger of solidifying as compared with natural oil? *A.* For the same fatty acid, I don't think there would be a great deal of difference. If you took an oil and made a liquid soap out of it, and then took the same fatty acid and made a liquid soap out of it, I doubt if there would be a great deal of difference, but I have no real knowledge on the subject.

Micellar Soap Solutions

In an effort to reconcile the points of view of McBain and Hartley, two types of micelles in soap solutions have been postulated. However, it is shown here that all the properties of these soutions can be accounted for on the basis of a single type of micelle. The results of x-ray analysis are interpreted by assuming that layers of water molecules are sandwiched between layers composed of elementary micelles of soap. These micelles can also form microcrystalline fibers; in this form they constitute the coagulated gel and account for the phenomenon observed below the Kraft point. The way in which layers, ribbons and fibers can be produced by aggregation of the micelles is discussed. D. Dervichian. *Compt. rend.* 217, 299-301; through Chem. Abs.

Antioxidant from Tannin

An antioxidant tar distillate containing substantial amounts of phenolic materials is obtained by the destructive distillation of a wood-free redwood tannin and phlobaphene extract at temperatures not exceeding 350°C. and a pressure not above atmospheric. H. F. Lewis, to The Pacific Lumber Co. Canadian Patent No. 431,058.

Synthetic Detergent

A new detergent is an alkyl aryl sulfonate mixed with 40-65 per cent by weight of a water-soluble alkali or alkaline earth sulfate, preferably sodium sulfate. The aromatic radical is preferably a phenyl or hydroxyphenyl compound and preferably free of substituents. The alkyl radical is introduced by alkylation of the aromatic compound with a mixture of chloro hydrocarbons resulting from chlorination of a selected petroleum distillate of the kerosene boiling range. A promoter such as anhydrous zinc chloride, aluminum chloride, antimony chloride, sulfuric acid, and others is used. The neutralized solution is concentrated to 30-35 per cent of solids and then spray dried. The end product consists of globular particles free of fines, with a bulk density of 0.99-0.11. P. T. Zizinia and T. L. McKenna, to Allied Chemical & Dye Corp. U. S. Patent No. 2,364,767.

Washing Wool Blankets

A comparison of different methods of washing wool and rayon blankets with a special blanket formula and a standard wool formula showed that the first method gave superior results in terms of avoiding shrinkage. This was to wash in a Monel blanket washer having one soap and two rinse compartments. Low-titer soap was used at a temperature of 100°F. throughout. The washing time, including soaking, washing and rinsing, was about 5 minutes. The blankets were then extracted for 1 minute, slightly shaken out by hand to loosen the nap, and hung up on a drying rack until dry. Measurement of the blankets before, and after 12 consecutive washings by this method showed that the blankets were 1 inch shorter in length but 1½ inch wider. Subsequently more drastic methods of washing resulted in further serious shrinkage. G. Becker. *The Laundryman*, Dec. 1945.

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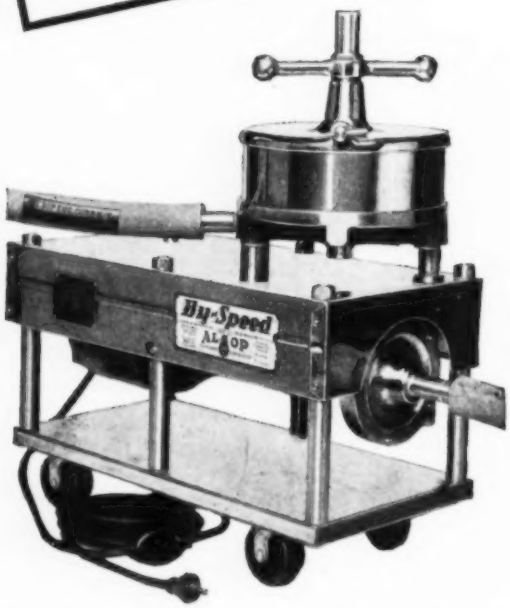

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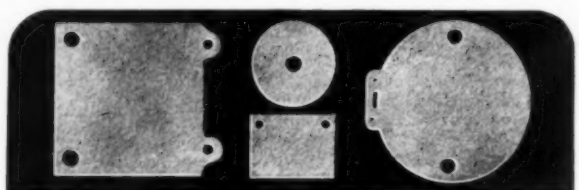

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PRODUCTION *Clinic*

By DR. E. G. THOMSSEN, PH.D.

THE wave of strikes which currently have pestered our industries leads to a helpful conclusion to be kept in mind. This conclusion is not a recent one by any means. Collective bargaining may give to labor certain advantages like paid vacations, rest periods, seniority and other advantages. It has given to them increased advantages in the form of recreational pursuits, group insurance, company retirement plans and other social plans for producing better labor-management relations.

While these may be appreciated to some degree, the ordinary working man is mainly interested, not in these, but in the rate of pay he receives. If he is once convinced that he can get more pay, he will soon forget all the good efforts of a company to build up this good will and strike when he thinks this is the means of obtaining the pay increase. Union organizers appreciate this conclusion better than many company executives who still believe they can placate labor with these good will lures and keep them on the job at lower wage rates in times of strained relationships.

Many an executive wakes up too late to understand what has often been implied to their bosses by the laboring man: "We are not so much interested in what you do for us as in what you put into our pay envelope. Given enough pay we can choose our own type of recreation, insurance and retirement plans. We don't need your help in this regard and prefer to live our lives rather than have you plan them for us."

This is about what the majority of them would say if given an opportunity. Since the contents of the pay envelope are of primary interest to labor, it is quite logical to conclude that better wages are worth more in building up good will than adding to manufacturing costs through the other procedures mentioned.

Labor has shown it wants no important part in the management of business. It would imperil its position if increased pay could not be continued under cooperative or coordinated management. What it does want is a bigger share of the profits. Labor has not yet been willing to participate in the deficits as well. Right now it is convinced that we face a long period of prosperity and it wants a larger cut.

Pay Incentive Plans

IN view of this condition management must give greater consideration not only to the pay increases requested but to various means of putting more remuneration into the pay envelope in a constructive way. This is most generally accomplished by cash bonuses or by pay-incentive plans. There is nothing mysterious about these. Any factory worker, man or woman, appreciates increased take-home pay. If they are carried out on a production basis, that leads to no suspicion. They usually work out very well and pay better dividends in building up better feeling than those means mentioned above. They warrant careful study and development on the part of labor relations experts to attain a more cordial understanding of labor-management agreements.

Bonuses are usually paid but once a year, at the close of the year. Such a procedure is quite often forgotten quickly. At Christmas time we sort of expect presents anyhow and a year-end bonus is just another Christmas present. It does seem that, in view of this, a monthly payment plan based upon some constructive criterion is a better way of paying bonuses.

Work incentive plans do not have this disadvantage of the cash bonus system. If the scheme is properly carried out, the employee knows each day just how much bonus, based upon a production record, he has earned the day before. We had many years experience with such a plan in a complicated business and it worked well without any friction between employees and bosses. It was applicable to individual workers, groups on straight line production, the receiving crew, the packers and the shipping clerks. Only those who did not participate in the plan, like mechanics and sanitation employees, complained. It resulted in increased production and the jacking up of slower workers of groups. Even some of the evils that permitted older less efficient employees to work when others were laid off due to seniority rules in union agreements, were neutralized.

It is too long a story to go into the intimate details of the plan. Briefly, the standard rate of production was established by timing prevailing production volume over a test period. Certain deductions were taken from this volume. This set the production rate. No deductions of pay were pos-

sible if the production fell below that rate. On the other hand, if the rate exceeded the standard, the employee earned a bonus. This bonus was converted to an earned hour-rate and every morning this was recorded on the employee's time card for the previous day. He knew then exactly how many additional minutes or hours he had earned each day. The increased bonus thus earned appealed to not only his cupidity but his gambling instinct. It often resulted in a friendly rivalry between groups of employees performing the same operations.

This question of wages is bound to be with us for a long, long time. We can hardly hope to raise wages and lower prices as politicians, particularly, assert is possible. Some method of basing wage increases upon a different standard than mere membership in a union will have to be evolved. It seems to us that the solution will come through participation of labor in the profits it earns.

Praise for Perfumers

AS we thumbed through the January issue of "Soap" recently, note was made of emphasis which had been placed on the perfuming of toilet soaps in that number. The advertising of the many suppliers of perfuming materials was read with keen interest as we reflected what an outstandingly fine job this industry had done to overcome the difficulties with which it had been confronted for over five long years of war. To produce consistently good, appealing and lasting scents for a myriad of items has been a real task during the past years. In the face of acute scarcities of many essential oils and other perfuming raw materials, manufacturers of soaps, sanitation supplies, and similar materials have in fact had less trouble with perfume difficulites than probably with any other raw material problem.

Odor is a vitally important adjunct to the sale of any product. Had satisfactory perfumes not been available, we wonder if the manufacturers of finished products realize to what extent the sale of their goods would have suffered even in war time. We wonder if the job done by the perfume materials suppliers—from the smallest to the largest—is duly appreciated. In our opinion, their demonstrated skill and ingenuity deserve high praise.

And while on the question of perfume raw materials, we can highly recommend a new book on the subject which is well worth reading, "The Science of Perfumery" by Edward Sagarin. It is an inspiring and not too technical work on the subject which makes easy and interesting reading.

Some New Machines

FOR those who desire a flexible labeling machine the newly developed Vac Spray Labeler manufactured by the Vac Spray Machine Co., of 1701 Olson Boulevard, Minneapolis, Minnesota, may be of interest. This labeler applies labels from the size of a postage stamp up to five inches in diameter, on containers from one-quarter ounce to one gallon size, at a rate of from 1200 to 3000 per hour. No stoppage of a production line is necessary to make the change-over from one size or shape of label to another or from one size container to another. The change-over can be made in about one minute. All types of labels may be used on any type or shape of container.

The speed can be varied over a range from 1200 to 3000 containers per hour depending upon the size of the container and the ability of the operator. The labeler is on casters and can be moved from one part of a plant to another.

An ingenious feature is the "magnetic label box" which depends upon the force of gravity of lead weights and inbuilt magnets to hold the labels in place. Another advantage is the especially patented "multiple wiper" which automatically wipes down the labels and containers. This feature seals the edges of stiff backed labels to the container—a previous problem in their application. It also wipes off the excess glue which might appear around the edges of the label on hand application and on most machine applications.

Attention is called to a new type straight-line liquid vacuum filling machine recently designed by Herman Manas, president of the M.R.M. Co., 223 East 106th St., New York, and being built by that company. The new machine is being built in eight, ten or twelve spout sizes with a wide capacity for bottle heights, mouth sizes and capacities from one ounce to one gallon. All liquids can be handled, including foaming products, at 40 to 100 per minute according to properties.

New Glycerin Book

THERE has come to our desk the new work "Glycerin, Its Industrial and Commercial Applications" by G. Leffingwell and M. A. Lesser. The book also contains a chapter on "Glycerin Derivatives" by H. Bennett. The subject matter covers a wide survey of patent literature and research findings, including a complete bibliography on glycerin uses. These results are itemized under various industries like Cleaners and Polishes, Packaging Materials, Plastics, Paper, Printing and Lithography, Cosmetics, Pharmaceuticals, Agriculture and Foods. In all about 27 industries are covered. There are also listed very briefly in one chapter 1583 ways in which glycerin is used and an appendix gives certain properties thereof which may be of value to the technical man.

To the glycerin refiner the book may help in indicating new channels for the uses of glycerin. It is quite probable that certain formulae and leads presented to the various industries covered will be of sales value. It is to be hoped that at some future date, the authors will enlarge the work to cover more fully individual glycerin uses in the various fields.

Alkaline Cleaning of Fruit

Fruits, especially citrus fruits, are prepared for shipment by scrubbing and soaking for four minutes in an aqueous solution containing 0.2 per cent of soap, 0.5 of soda ash, 0.15 of sodium orthophyenyl phenolate as disinfectant, and 1 per cent of sodium pyrophosphate. The surface is then rinsed, but blemishes and decay are penetrated permanently by the treating solution. A. F. Kalmar, U. S. Patent No. 2,374,209.

PRODUCTS AND PROCESSES

Alkenyl Succinic Detergents

Water-soluble salts of the partial esters of alkenyl-substituted polycarboxylic acids resulting from the reaction of an unsaturated polycarboxylic acid containing the grouping –C:CCO with an alkyl halide or olefin containing 5-16 carbon atoms are surface-active agents and detergents. L. P. Kyrides, to Monsanto Cehmical Co. U. S. Patent No. 2,380,699.

Fatty Acid Emulsifiers

Introduction of oxygen into fatty acid molecules increases their water-soluble properties and makes them good emulsifiers. Such emulsifiers can be prepared by passing air through unsaturated fats at a temperature of 200-230°C. They compare favorably to polyglycols and sugar alcohols in their emulsifying properties. B. Y. Golant and A. M. Egorova. *Pishchevaya Prom.* 1943, No. 3/4, 57; through Chem. Abs.

Dog Shampoo

A shampoo for dogs said to maintain a healthy condition of the skin can be made from the following:

	Parts by weight
Soft soap	8
Glycerine	2½
Alcohol	2
Phenol	⅜
Eucalyptus oil	¼
Water, to make	35

This should have a deodorizing action. To make it effective against fleas etc. an insecticide such as pyrethrum or rotenone can be incorporated in small proportions. *Drug & Cosmetic Ind.* 57, 852 (1945).

Synthetic Detergent Bar

A detergent composition in cake form for toilet purposes and possessing cleansing and sudsing properties similar to those of soap, consists of a non-aromatic soapless synthetic detergent mixed with a neutral "amido body" which is non-irritating to the skin. The detergent is an anion-active organic sulfate having a hydrocarbon chain of 12-14 carbon atoms. L. H. Flett. Allied Chem. & Dye Corp. Canadian Patent No. 431,335.

Deodorizing Oil

Glycerine oils such as soybean are deodorized by passing dry steam through the oil while at a temperature of 250-350°C. under reduced pressure. This treatment removes unsaponifiable matter. R. H. Neal, to Best Foods. Canadian Patent No. 431,620.

Amides as Detergent Aids

The effectiveness of detergents of the organic sulfonate and aliphatic sulfate ester class is improved by a mixture of an amide derived from a fatty acid containing 10-14 carbon atoms and having the general formula RCONR'R," where R' and R" may be hydrogen or an alkyl group of 1-4 carbon atoms. Preferably the proportion of amide is within the range of 8 to 20 per cent based on the weight of active detergent. A. S. Richardson and W. H. McAllister, to Procter and Gamble Co. U. S. Patent No. 2,383,738.

Floor Polish

An aqueous wax emulsion or a solution of wax in an organic solvent mixed with a pectin ester or its solution, is used for floor polish. R. Meissner. German Patent No. 740,857; through *Chem. Abs.*

Phosphated Oils

Surface-active agents are made by blowing air or oxygen through oils or waxes at 150-190°C. with or without oxidation catalysts such as fatty-acid salts or oxides of metals, until the specific gravity is raised by 0.015-.10 unit. The blown oil or wax is then treated with phosphoric or other phosphorous acid at 60-125°C. for several hours, washed with water, and neutralized with a caustic alkali or amine. J. G. McNally and J. B. Dickey, to Eastman Kodak Co. U. S. Patent No. 2,386,250.

New Organic Alkali

An organic alkali, phenyl trimethyl ammonium hydroxide, $C_6H_5(CH_3)_3NOH$ has recently been developed by the Monsanto Chemical Company at the Merrimac Division in Everett, Mass. It is available for experimental purposes and should be useful to neutralize acids where it is desired to have the salt soluble in polar organic solvents. In a 19-20 per cent aqueous solution the product is a clear yellow to orange liquid with a freezing point below –20°C; it is nonflammable. Being a strong alkali it is corrosive to certain metals, causes rapid disintegration of cellulose, etches glass, and burns the skin. It has no action on steel drums. Its soaps may have possibilities.

Emulsion Cleaner

A solvent emulsion cleaner is prepared by mixing refined tall oil 46.2 parts, with triethanolamine 8.8 parts and then incorporating successively, pine oil 7.3 parts, butyl ether of ethylene glycol 14.2 parts and 23.5 parts of aqueous 50 per cent caustic potash solution. Heat is generated by reaction of the potash with the tall oil. Before use the composition is preferably diluted with 1 to 20 parts of kerosene or carbon tetrachloride. When used, the composition is first applied to the soiled material such as a dirty machine part or heavily soiled laundry, and then water is used to remove cleaner and dirt in emulsified form. C. S. Lower, to The Pennsylvania Salt Manufg. Co. U. S. Patent No. 2,374,-113.

Purification of Glycerine

Glycerine can be purified by hot digestion with concentrated sulfuric acid, saponification with lime paste, acidification with sulfuric acid to pH 3, filtration, treatment with an anion-adsorbent resin, and distillation. Overall recovery of glycerine is 91 per cent. H. E. Hoyt, to U. S. Industrial Chemicals, Inc. U. S. Patent No. 2,381,055.

NEW PATENTS

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No. 2,391,890, Fumigant Mixtures, patented January 1, 1946 by Fred W. Fletcher and Eugene Kenaga, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich. In a method for fumigating insect infested grain, stored in bins, the step of introducing a volatile fumigant comprising as a major toxic ingredient a solution of from 2.5 to 20 per cent by volume of ethylene bromide in carbon tetrachloride in the top of the bin and onto the surface of the stored grain.

No. 2,391,919, Treating Soap Products, patented January 1, 1946 by Thomas Penny, Brimstage, Bebington, England, assignor to Lever Brothers Company, Cambridge, Mass. Apparatus for imparting a glossy finish to the surface of soap cakes or bars comprising a steaming chamber, a plurality of steam jets disposed within said steaming chamber, a drying chamber, means for supplying a flow of drying air to said drying chamber, means for supporting each of said cakes or bars out of contact with other cakes or bars and in a position to expose substantially the entire surface thereof, and means for conducting said soap cakes or bars in spaced relationship successively through said chambers, said conducting means comprising an endless belt, and a plurality of platforms thereon, said platforms being provided with a plurality of platforms thereon, said platforms being provided with a plurality of pins adapted to support the soap cakes or bars in spaced relationship with substantially the entire surface thereof exposed.

No. 2,392,067, Insecticides, patented January 1, 1946 by Herbert Schotte, Berlin-Charlottenburg, and Robert Ebert, Berlin-Halensee, Germany, asignors to Sherka Chemical Co., Inc., Bloomfield, N. J. An insecticidal composition, comprising a dihalogenated 3,6-dinitro carbazol, a wetting agent and a filler.

No. 2,392,072, Producing Light Bulky Soap Particles, patented January 1, 1946 by Alfred Vang, New York, N. Y., assignor of one-half to Stevenson, Jordan & Harrison, Inc., New York, N. Y. A method for making soap particles said method comprising vertically vibrating a substantially horizontal hard surface at high frequency, passing a stream of molten soap downwardly, against said surface to impinge thereon to substantially form a fog above the surface, and passing a horizontal substantially unconfined stream of cooling air through the fog to solidify the minute particles and transport the resulting solids, the velocity of the air stream diminishing as it leaves the vicinity of the surface, so that heavier solid particles settle from the air stream nearer the vibrating surface than do the lighter solid particles.

No. 2,392,455, Insecticide, patented January 8, 1946 by Charles Verne Bowen, Bethesda, Md., and Lloyd E. Smith, Washington, D. C., assignors to Claude R. Wickard, as Secretary of Agriculture of the United States of America, and his successors in office. An insecticide containing as its essential active ingredient 3-nitroacenaphthene.

No. 2,392,569, Extraction of Glycerin from Fermentation Residues, patented January 8, 1946 by Frederick R. Balcar, Stamford, Conn., assignor by mesne assignments, to U. S. Industrial Chemicals, Inc., New York, N. Y. The method of recovering glycerin from concentrated distillery slop which comprises subjecting a liquid slop containing 30 to 50% by weight of material other than glycerin, nonvolatile at 100-105°C. to counter-current extraction with aqueous acetone containing between 50 and 90% acetone by volume.

No. 2,392,733, Mothproofing, patented January 8, 1946 by Avery H. Goddin, Newark and Norman E. Searle, Wilmington, Del., assignors to E. I. du Pont de Nemours & Company, Wilmington, Del. An article of commerce prepared and packaged as a mothproofing composition containing as an essential active ingredient a benzyl phenyl ether having at least one nuclear chlorine substituent in the benzyl group and a molecular weight less than about 360.

No. 2,392,779, Detergent Composition, patented January 8, 1946 by Jere C. Showalter, Goose Creek, Tex., assignor to Standard Oil Development Company. A cleansing composition in paste form comprising a mixture of 20% to 35% of a heavy petroleum oil distillate selected from the group consisting of lubricating oils and gas oils, 20% to 35% of water and 20% to 30% of a finely divided, nonabrasive, absorbent material, the proportions of the several ingredients being adjusted within the ranges given to total 100%.

No. 2,392,831, Method of Treating Soap, patented January 15, 1946 by John W. Bodman, Winchester, Mass., assignor to Lever Brothers Company. A method of treating a piece of soap in solid form following the final shaping operations and prior to packaging and shipment to the user thereof, for the purpose of improving the appearance of the surfaces of the soap which comprises immersing the piece of soap for a brief period of time into a bath of water at a temperature of not less than 150°F. to permit the water to act merely upon the soap surface, and then drying the soap without otherwise disturbing the surface thereof.

No. 2,392,859, Herbicides, patented January 15, 1946 by Lloyd J. Meuli, Midland, Mich, assignor to The Dow Chemical Company, Midland, Mich. An herbicidal composition including as an active ingredient a member of the class consisting of 2,4-dinitro-6 - secondarybutyl - phenol and its water-soluble salts, and a carrier therefor.

No. 2,392,961, Insecticides, patented January 15, 1946 by Charles F. Woodward, Abington, and Florence B. Talley, Philadelphia, Pa., and Elmer L. Mayer, Sanford, Fla., and Ernest G. Beinhart, Philadelphia, Pa., assignors to United States of America as represented by the Secretary of Agriculture and his successors in office. An insecticidal composition comprising 2,2-bis (p-chlorophenyl) 1,1,1-trichloroethane and a nicotine compound as its essential active ingredients.

No. 2,393,844, Polishing Composition, patented January 29, 1946 by Blanche C. Van Valkenburgh, New York, N. Y. A polishing composition consisting of a saturated solution of lime water containing therein approximately 16 parts by weight of zinc oxide per 60 parts by fluid measure of the lime water.

SHAMPOOS

(*From Page 37*)

It is important that the shampooing operation for removal of dandruff be given more emphasis than is usually the case. The frequency of washing the hair is important. If heavy deposits of loose dandruff are present, daily shampooing should be resorted to for about a week. Then as the loose scales are reduced the intervals may be increased to two or three days. In soaping the hair, it is good procedure to use preferably soft water as hot as is comfortable. A preliminary washing and rinsing is first resorted to, followed by application of a concentrated shampoo solution. If possible this should remain on the hair for a quarter to half an hour. Then the washing should be completed. If hard water and soap are used, some people like a rinse of diluted vinegar to remove any lime soap adhering to the scalp. Lemon juice is also used for this purpose. When the hair has been completely dried, a thorough brushing or brisk massaging of the scalp to increase the blood supply is desirable.

IN considering shampoo preparations, it is customary to classify them in two categories, soapless and soap types. The shampoo soaps come in cake, powder, jelly and liquid form. Soapless shampoos are most generally liquid, although powdered and jelly types are found on the market in limited number. All the soap shampoos lather whereas the soapless type may or may not form a lather. While the soapless type of shampoo is slowly gaining popularity in certain directions, the soap type is still apparently preferred by most consumers. It may also be said that, of all the hair and scalp cleansing preparations, ordinary cake toilet soap is probably still used most extensively.

There are certain advantages claimed for both the soap and soapless types of shampoos. These latter consist of two kinds, the earlier ones of sulfonated oils, usually castor or olive oil. Sometimes a small quantity of mineral oil is added. Since human hair is closely related to wool in its chemical composition, it is quite reasonable that saponified oils used in the textile industry under the name of Turkey Red Oil should also be used as shampoos. This sulfonated castor oil is too viscous to be used without further additions, so sulfonated olive oil or other sulfonated vegetable oil together with mineral oil is usually added or used alone. Sulfonated-oil-type shampoos should show a pH slightly on the acid side, pH 6 to 6.5. If made alkaline, they are converted into soaps. Some producers also add benzoic acid or benzoic acid esters as preservatives. Sulfonated oil soapless type shampoos are excellent hair cleansing agents. They readily remove the natural oil from the hair but leave it rather dull in appearance. For this reason up to about 4 per cent of mineral oil is an advisable addition since some of this remains on the hair to impart lustre after shampooing.

In recent years the foaming type of soapless shampoos has outdistanced the soapless-latherless-sulfonated-oil-type. The foaming type possess an eye appeal in forming copious lather, which many consumers prefer for hair washing. The new foaming shampoos consist of surface active or wetting agents. They have the further advantages of lathering in hard water and rinsing easily, as well as not leaving lime soap deposits on the hair if hard water is used. They are increasing in popularity because they find ready consumer acceptance.

Soapy or soap type shampoos still hold the greatest volume. The most popular of these is ordinary liquid coconut oil soap, containing around 20 per cent anhydrous potash coconut or high lauric acid soap. The reason for their commanding 90 per cent of the soap shampoo market is not difficult to fathom. This type of shampoo lathers readily and profusely in all types of water, even sea water. It stimulates the scalp, cleanses well and rinses easily. Then too, the slight alkalinity found in this type of soap is held to be of value in combating dandruff and seborrhea. The lather is heavier than that produced by wetting agents, which is a property preferred by most users. A recent survey of users of shampoos, both male and female, indicates that liquid coconut oil soap is the most generally preferred of all hair cleansing preparations. Besides coconut oil liquid shampoos, soapy shampoos are made from olive oil, sesame oil, soy bean oil and other vegetable oils, either alone or most generally in combination with some high lauric acid oil. Those usually form a heavier, but not as easily rinsing lather as the coconut oil types. Soap shampoos are also popular to a degree in cake form with a high sodium coconut oil soap content. Tar soaps thus made enjoyed considerable popularity for years. The powdered soap shampoos, paste, jelly and "milk" types find some sale but nowhere near that enjoyed by the liquids. Powdered shampoo soaps sometimes are made with hair tinting ingredients like henna, incorporated.

(*To be continued*)

Soap in the Operating Room

The question has been raised as to whether tincture of green soap should be sterilized before use in the preparation of patients for operation. A reply published in the *Journal of the Am. Medical Assoc.* states that many surgeons have substituted plain white soap for tincture of green soap both for washing before operation and for preparation of the patient to be operated on. Clinical observations over a considerable period indicate that as a result of this substitution better results are being obtained as far as healing is concerned, and that plain white soap is less irritating both to the hands of the surgeon and the skin of the patient. The white soap used is not sterilized. *Perfumery & Essen. Oil Record* 36, 302 (1945).

Test Chlorine Rinses

A colorimetric method for determining available chlorine is by oxidation of a reagent such as a diamino compound like 3,3′-dimethyl-4,4′-diamino biphenyl dihydrochloride, to colored meriquinone or diversely colored holoquinone. The best results are obtained at a pH of about 4. The method is particularly useful for testing rinsing or sterilizing solutions used in the dairy or restaurant industries. H. Scharer. U. S. Patent No. 2,385,471.

Fatty Acid Chlorides

Fatty acid chlorides of lauric, myristic, palmitic, stearic, oleic, elaidic, and linoleic acids were prepared using phosphorus tri- and pentachlorides, oxalyl chloride, and thionyl chloride as chlorinating agents. On the basis of yields, ease of handling, and cost of reagent, phosphorus tri- and pentachlorides are superior to other chlorinating agents for the preparation of the higher fatty acid chlorides for use as intermediates in the preparation of pure saturated fatty acid glycerides of known structure. The unsaturated fatty acid chlorides are best prepared from oxalyl chloride. S. T. Bauer. *Oil & Soap* 23, 1-5 (1946).

Acids of Menhaden Oil

Analysis of the fractions obtained as a result of distillation of the methyl esters of the hydrogenated acids of menhaden oil show the amounts in terms of chain length in per cent by weight as follows: C_{14} 6.9, C_{16} 30.4, C_{18} 26.8, C_{20} 17.5, C_{22} 10.8, C_{24} 4.0, C_{26} 1.2, above C_{26} 2.4. In addition about 0.1 per cent of C_{12} acids was demonstrated previously. F. A. Smith and J. B. Brown. *Oil & Soap* 23, 9-10 (1946).

Surface Tension Method

An improved apparatus for the determination of surface tension with sessile bubbles is described in which the dimensions of the bubbles are measured with a comparator. Empirical equations have been derived to provide for anomalies in bubble shape,so that determinations can be made with good precision. A photographic process has also been developed for use with sessile bubbles. O. L. Wheeler, H. V. Tartar and E. C. Lingafelter. *J. Am. Chem.* 67, 2115-19 (1945).

Soft Soaplike Products

Sulfonation products are mixed with a saponifying solution containing cellulose ether acids or their salts, and allowed to stand until the new salts are formed. H. Manneck, to Kalle & Co. A.-G. German Patent No. 742,194.

Method for Peroxide Value

A critical examination of the method for determination of the peroxide value of fats and oils resulted in a method applicable at room temperature. Procedure. Weigh 1 gram of sample into a test tube, add 20 ml. of a mixture of 2 volumes of glacial acetic acid and 1 volume of chloroform, then 1 ml. of a freshly prepared saturated solution of potassium iodide. The tubes must be protected from daylight during the reaction with iodide. Immediately after addition of iodide, start bubbling an inert gas such as carbon dioxide or nitrogen through the mixture. Allow the reaction to proceed for 1 hour at room temperature. Transfer the contents of the tube to a 300 ml. conical flask and wash out the test tube with distilled water. Titrate with freshly made 0.002 Normal sodium thiosulfate solution, using a starch indicator at the end.

The peroxide value is ml. of 0.002 Normal sodium thiosulfate solution required for 1 gram of oil or fat. C. B. Stuffins and H. Weatherall. *Analyst* 70, 403-9 (1945).

Flameproofing of Textiles

Flameproofing can be readily carried out as a laundry operation. During the past 4 years large quantities of cotton clothing worn by workers in munitions plants have been given flameproofing treatments in order to reduce the fire hazard. A flameproofed garment will not support a flame but may char in contact with a flame.

The chemicals most widely used for the purpose are water-soluble and must therefore be restored after washing. A mixture containing one part by weight of boric acid and 2 parts of borax has proved satisfactory. The fabrics to be treated should be well washed and dried before being immersed in the solution. This is made by dissolving 17½ pounds of the above mixture plus ½ ounce of a synthetic wetting agent in 10 gallons of water at about 125°F. The solution should be kept at 75°-100°F. during the immersion process. After thorough impregnation, excess solution is removed by wringing or centrifuging. Approximately 8 per cent of the dry salts should remain in the clothing after the latter is dried. It is therefore necessary to weigh the clothing before and after the operation. The weight of treated clothing after extraction should be twice the original dry weight in order to ensure the final concentration of salts desired. Tumbler drying should be avoided so that the salts will not be dusted off.

A good procedure is to put through a few pieces of cloth 6″ by 12″ with the load; these may be pinned to the garments. The test pieces are treated and dried in the same manner. When dry, they are tested for flameproofness by applying a match flame to the lower edge of the piece held in a vertical position. If there is no progression of flame over the surface, and if when the match flame is removed no flame remains on the fabric, the treatment is satisfactory.

Now that the war is over, it is probable that this treatment will be used to flameproof such articles as drapes, decorations etc. *Laundry & Dry Cleaning J. of Canada* 25, No. 8, 26 (1945).

Oxidation Tests

The Lea peroxide test for oxidative rancidity has been applied to soap emulsified or hydrated in cosmetic products. The only difference from the original technique is that instead of oil, one gram of soap is substituted. The result is calculated directly per gram of soap. If only the state or extent of oxidation of a soap sample is to be determined, the exposure of the sample need not be considered. If the tendency of the sample to become rancid is to be estimated, it is necessary to control the exposure of the product to the action of oxygen or air. A number of tables give the results, comparing soaps of different kinds under similar conditions, the development of peroxides in soap as compared with their respective oils, the influence of free alkali and unsaponified matter, and the influence of certain antioxidants. E. J. Better and A. Davidsohn. *Oil & Soap* 22, 325-7 (1945)

Continental Can Announces Changes

Continental Can Co., New York, recently announced the acquisition of Fibre Can Machinery Corp., Rutland, Vt., and Filer Fibre Co., Filer City, Mich. The production of both companies will be utilized immediately by Continental. Filer manufactures kraft pulp and paper, while Fibre Can Machinery Co. develops and manufactures high speed automatic machinery for production of fibre containers. Continental Can's paper division now comprises seven paper container, four fibre drum and one corrugated box manufacturing plants; two paper mills; and the new Fibre Can Machinery Co.

Continental also announced that its plant at Humboldt Ave. and Broadway, St. Louis, has been returned to its owners by the Army after nearly four years' use as an ordnance warehouse. It will be used for can production as soon as renovation and equipment installation can be completed. The one million dollar plant, one of the largest of the new one-story type Continental buildings, was turned over to the Army upon its completion in February, 1942.

Personnel changes at Continental announced recently include: the election of T. C. Fogarty, formerly general manager of the company's eastern division, as vice-president in charge of sales; Paul E. Pearson, formerly vice-president in charge of equipment development and research, was named vice-president in charge of operations; Allen M. Cameron was moved up from general manager of equipment development and manufacture to the position vacated by Mr. Pearson.

M M & R Insures Employees

A complete program of group insurance protection for its employees has been put into effect by Magnus, Mabee & Reynard, Inc., New York, it was announced recently.

A list of essentials oils and related products grown and distilled in the United States is contained in a recent booklet issued by the company, which advocates that the essential oil consuming industries make themselves completely independent of reliance on foreign aromatic chemical products.

Moore Dispenser Changes

Moore Bros. Co., New York, has just announced several changes in their "Peer No. 100" soap dispenser. The metal bracket and valve of this particular dispenser have been changed to a streamline design that is intended to add both improved appearance and increased durability. The mechanism also has been modified with chrome plated brass being used in place of a wartime substitute material.

Geigy Distributes DDT Booklet

Geigy Co., Inc., New York, is distributing a 24-page booklet entitled, "Mechanism of Intoxication of DDT Insecticides in Insects and Warm-Blooded Animals." The booklet is based on paper by Dr. Paul Lauger, director of research, J. R. Geigy, S.A., Basle, Switzerland, presented at a joint meeting of the Army Committee for Insect and Rodent Control and the O.S.R.D. Insect Control Committee. Copies of the booklet are available.

Corrections

In the Chemical Supply Co. advertisement on page 144 of our January issue we erroneously listed the firm's address as 2450 Canal Road, Cleveland. It should have read 225 Plymouth Building, Cleveland 15. On page 145 of our February issue, in listing the names of the registrants at the New York N.A.I.D.M. meeting in December, we inadvertently omitted the name of Geigy Co. in connection with its representatives: Victor Froelicher, Melvin Goldberg, Max Parrot and Robert E. Wean, at the meeting.

Rene Forster Incorporates

Incorporation of Rene Forster Co., New York essential oil house, has been effected as of Mar. 1, the company announced recently. The management and sales will continue under the direction of Rene Forster, Arnold F. Anderson, Frank H. Sloan, F. K. Schubert and Robert F. Saenger. Mr. Saenger recently rejoined the sales staff of the company after four years with the Army.

Omission from Cationic Spec

The text of a new proposed specification for cationic disinfectant, prepared by the Disinfectant Scientific Committee of the National Association of Insecticide & Disinfectant Manufacturers and printed in the February issue of *Soap and Sanitary Chemicals* (page 161) was incomplete due to an omission by the printer. The following paragraphs (5, 6, 7 and 8) should have been included, following paragraph 4.

5. A 1:100 dilution of a cationic unit of the product in distilled water shall show no more deleterious effects than a 2% solution of liquor cresolis saponatus on plastics, rubber, and metals when tested as specified in Paragraph 2—proposed methods of test for Cationic Disinfectants.
6. A 1:200 dilution in distilled water of a cationic unit of the products shall be substantially odorless.
7. Cationic disinfectants may be supplied at any multiple of the strength of a single cationic unit.
8. The Cationic Disinfectant as supplied shall still meet these specifications at the end of one year under normal storage conditions.

Chemical Sales Incorporates

Chemical Sales, Inc., Little Rock, Ark., has filed articles of incorporation to engage in the manufacture and sale of cleansers, powders, soaps, and similar products, it was learned recently. Edwin A. Jones, Brinkley, Ark., is resident agent. Incorporators are Mr. Jones, R. E. Stobaugh of Humbolt, Tenn., and John C. Adams of Memphis.

First Machinery in New Quarters

First Machinery Corp., New York, recently announced the purchase of the building at 157 Hudson St., New York, which will be the company's new headquarters. First was formerly located at E. 9th St., and E. River Drive, but because their headquarters there were condemned to make way for a housing project, the company had to seek new quarters elsewhere. An auction sale of all used equipment warehoused by First was held Feb. 27 and 28. The company was scheduled to occupy its new quarters around Mar. 31.

SANITARY PRODUCTS

A SECTION OF SOAP

Official Publication National Association of Insecticide & Disinfectant Manufacturers

ALTHOUGH the steel strike is over, its effects are just now beginning to be felt with full force in those industries depending on its chemical derivatives. Scarcities of all coal-tar products,—tar acid oils, creosote oils, phenol, naphthalene, not to mention benzol, toluol and xylol upon which so many chemical operations depend,—are reaching the acute stage. Manufacturers in the disinfectant, insecticide and allied fields are finding it more difficult daily to obtain sufficient raw materials to supply the demand for finished products.

Hope for near-by improvements in the coal-tar materials supply is not great in view of the added threat of a coal strike. Coal above ground suitable for coking purposes is known to be in very small supply. Any cessation of mining operations will only aggravate further the present situation in coal-tar derivatives. With this in mind, disinfectant and other manufacturers of chemical specialties will probably have to curtail shipments,—a condition which is not likely to clear up until the full effects of both steel and coal difficulties are overcome.

BUGS! Bugs! Bugs! All through the war, bugs and how to kill them received a billion dollars worth of publicity,—every dollar of it a mighty valuable sales asset to the insecticide industry. But the war is over. Stories in the newspapers on flies and mosquitoes in the Pacific, lice in Italy and Sicily, fleas and bedbugs in Africa, and so on have ended. From now on, the insecticide manufacturer is on his own as far as newspaper publicity is concerned,—as far as keeping the public bug-conscious is concerned. And if he lets this foundation for future larger sales crumble and disappear because of lethargy and inaction, it does not take a very vivid imagination to picture exactly where he should be kicked!

THE Federal Trade Commission has a "pile of complaints a foot high" on its desk in Washington involving insecticide and other chemical specialty products. This is what a grapevine report from that city tells us. And it goes on to say that most of the complaints involve smaller companies, chiefly makers of household insecticides. A considerable portion of these are supposed to include products put on the market last summer during the big DDT gold rush, some of which have been changed or withdrawn from the market and others which are still being sold in their original form.

From the nature of the complaints, the FTC is purported to have acquired the impression that the insecticide business is well ingrained with crooks and chiselers, and that it is in need of a little going over. All insecticides are supposedly being viewed with suspicion, and if they claim a DDT content, the suspicion is doubled in spades. How accurate this grapevine report is, we do not know. But it may well be fact,—and demonstrate how a minority of malefactors can bring down the wrath of a government bureau upon the head of a whole industry. It can conceivably also add unjust injury to the reputation of DDT as an insecticide.

We sincerely hope if the FTC plans to act on this reported "pile of complaints" that it will view its findings in the light of all the facts and temper any news releases with unusual care,—and avoid giving the public the impression that DDT is at fault, when in reality the fault, if any be found, must lie with those who misuse DDT and make it a tool for their misrepresentation.

GERMAN INSECTICIDE EVALUATION

By
Lowell B. Kilgore

The third in a series of articles reviewing developments in the German insecticide industry and reporting on the insecticides used by the Germans during the recent war. This concluding installment is particularly concerned with Testing Techniques developed by the Germans.

THE two preceding papers dealing with synthetic insecticides in Germany indicate the nature and scope of the activity of the German chemists in the field of insecticides covering the years immediately prior to and during World War II. The present paper is primarily concerned with the methods which the Germans employed to evaluate the toxicity of their various chemicals toward insects and warm-blooded aniimals. As was pointed out before, research in the chemistry of insecticides had advanced much farther in the United States than in Germany, particularly in the direction of formulation of products suitable for military usage. A similar situation was found to exist in regard to the biological assays, a fact which was rather surprising in view of the opinion prevalent regarding German pharamaceutical and medical research. Since the laboratories visited in most cases had been either partially or wholly destroyed, the techniques employed were obtained only by oral description and interesting data which would have been obtained by a visual inspection were undoubtedly missed. Fortunately, the laboratories of the plant protection division, Pfauzenschutz—Abteilung, of the I. G. Farbenindustrie Aktiengesellschaft at Hochst (near Frankfort A. M.) were undamaged, and most of the personnel still on duty, so that a detailed study of their work was possible.

The only testing of insecticides which had any authority or regulation meaning was that conducted by the Biologische Reichsanstalt at Berlin regarding suitability for marketing. The details of these tests were not available but they were apparently based on simple "practical" observations and the judgment of the investigator. Therefore, there were no means by which the German results could be compared with those obtained in the United States. The following testing procedures are given in detail as illustrative of the methods used insofar as they have been reported.

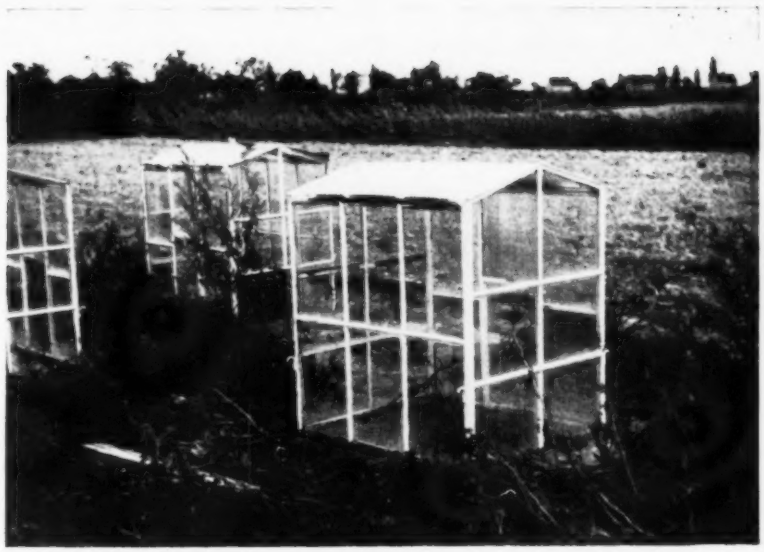
A. Testing of Contact Poisons

SINCE the Peet-Grady method, which is used so extensively in this country, has been so meticulously developed and standardized, a comparison with its German counterpart should be of interest. The following is a description of the method used at the Hochst I. G. plant protection laboratories.

The flies (*musca domestica*) used for the test were reared throughout the cycle, from eggs to three-day old adults, in the same cage. The cages were approximately 18″ long, 12″ high and 12″ wide with screen on the four sides. They were fitted at the bottom with a drawer about 2″ deep which was filled with manure. The manure was not incubated nor fortified with any nutrient materials.

Eggs were placed in the manure with no further attention until the adults emerged, when cottage cheese was supplied as the only food. The flies so obtained were of medium size but their resistance could not be estimated as no insecticides with which we were familiar were available for comparison. In fact, no attempt was made to standardize the fly resistance against any chemical. No temperature controls were maintained in the rearing rooms other than those provided by the main heating system, and humidity was not even considered as a factor.

The testing chamber used at Hochst consisted of an all-glass cubical cage one meter on each edge. The material to be tested was sprayed by mans of an all-glass handmade atomizer based on the conventional principle of blowing an air stream across a small tube. The atomizer, which required 12 pounds of air pressure, was very similar to those used in the United States. It was fed by an air hose through a hole in the center of the floor and could be manipulated with a circular motion from under the chamber, thus giving a good distribution of the spray in the chamber. Only water emulsions or solutions were used, as the Germans could spare no oils for that purpose. The chamber was ventilated by means of a two inch pipe attached to the top at the center and connected to the vacuum system of the laboratory. This provided a high velocity removal. The glass walls were washed after each test with "available" organic solvents. In the demonstration made for the writer an uncounted number of flies (later found to be 335) was introduced into the chamber directly from the rearing cage. The cup of the atomizer had been filled with two cubic centimeters of a three percent emulsion of the "Gix" concentrate which contained 60% di-p-fluorphenyl trichlorethane (Fluoro-DDT, supra) so that the active ingredient in the spray material was present in a concentration of 1.8%. A very fine dispersion was produced but settled quickly. The insects began to fall in 8 minutes and 318



Testing "Lauseto" using Colorado Beetles feeding on potato plants in the field.

or 95% were on the floor of the chamber at the end of the 15 minute period allowed for the test; 17 remained partially disabled, mostly sticking to the walls of the chamber. After ventilation the latter were collected by means of a suction flask and rubber tube. They were placed in a small battery jar covered with a cloth but were not supplied with food of any kind. The "down" flies were scraped up between two cards very hurriedly with no apparent care to avoid injury "because they will all die anyway". They were placed in a liter battery jar also without food and left over night. All flies in both jars were found to be dead upon examination the next morning.

The other laboratories used much simpler tests of an exploratory nature. For example, filter paper was impregnated with a solution of the material in acetone and allowed to dry. These treated papers were placed in petri dishes and flies confined over them. This was explained as a "foot-poison" test method.

A similar test used by other German workers consisted of impregnating a sheet of paper (20 to 25 centimeters square) and using it as a side of a ventilated wooden box containing the flies. The paper side was placed towards a bright light which attracted all the flies to that part of the cage and caused them to alight on the treated paper side. About 20 house flies 2 to 3 days old were used and the "downs' counted after three hours. The results of a typical run comparing "Gix" and DDT are as follows:

Percentage Concentration		Number of Flies Counted As:		
"Gix	*DDT*	*Down*	*Moribund*	*Slightly Affected*
2	2	17	3	0
	2	5	9	6
1		9	10	1
	1	0	11	9
0.5		1	6	13
	0.5	0	14	6

In comparsion with the detailed procedure for testing contact inesticides used in this country, namely, the Peet Grady method, such results as shown above meant very little to our investigators. However, the Germans regarded them as being highly significant.

ALL new compounds were also tested for activity as lousicides against the body louse. The test used consisted of three steps, as follows:

(a) Preliminary screening was accomplished by dusting 10 to 20 adults with the material to be tested diluted with talc to give 10% active material. The insects were allowed to remain in the dusting container, usually a beaker, for 10 minutes and then were transferred to a clean observation cage. The time of contact with the dust was actually a little over 10 minutes as the lice contacted each other and walked in the dust which had fallen off in the observation cage. These factors increased the dosage.

Showing the effect of "Gix" as a food poison towards house flies using impregnated cloth which had been treated with 3 per cent water emulsion and stored for six months.

(b) The repellent and fumigation effects of chemicals were determined by dusting several small (10x10 centimeters) pieces of cotton cloth uniformly by means of a sieve. The amount dusted onto the cloth was determined only by the judgment of the operator. A counted number of lice were placed on the dusted side of the cloth and the container in which it was set covered with a glass dish to confine the vapor as well as the insects. Since the insects had a choice of moving about on the treated or untreated sides of the cloth, any repellent effects could be observed. Also, if a kill was obtained here and not in (c) below, the chemical had fumigation properties.

(c). The same procedure as in (b) is repeated except that an open wire screen cage is used to confine the insects but not the vapor, thus substantially eliminating the effect of fumiga-

tion. *Both* sides of the cloth and the insects were dusted giving no choice of orientation. Tests (b) and (c) were continued for 24 hours.

In all cases, an observation was made after 24 hours. By comparing the various results obtained, the nature of the toxicity towards insects could be deduced. Those which were not dead were tested for their ability to feed by sucking blood and the results recorded as dead, moribund or living.

Using the above methods as research tools, it was shown that the dialkyl sulfones were very active lousicidal materials but they were impossible to use because of their extreme toxicity and irritation of the skin. When one of the aliphatic groups was replaced with an aromatic group such as phenyl or substituted phenyl. these difficulties were reduced considerably. Substitution in the benzene ring which increased the insecticidal activity appeared also to increase the toxicity to warm-blooded animals. These results led to the development of "Lausetoneu", the active principle of which is p-chloro-phenyl chloromethyl sulfone.

GERMAN insecticide chemists have been very active in protecting the national forests against insect attack. Chemicals believed to be suitable were tested against caterpillars and gypsy moths using the "bell jar" method as follows: The insects, usually third instars (the second and third instars are most important) are counted on to a plate glass and covered with a bell jar 37 centimeters high and 23 centimeters in diameter. A foot length of glass tubing having an inside diameter of a centimeter was bent at a right angle about four inches from the end. The end of the shorter arm was constricted to about 5 millimeters in order to increase the velocity of the air blown through the tube. This arm was inserted through a stopper in the top of the bell jar so that about three inches extended down into the jar vertically. A small metal cone, 5 centimeters in diameter, was suspended in an inverted position with its point centered directly under the constricted

I. G. Farben Plant Protection Institute at Hochst (Frankfort A. M.).

aperture of the glass inlet tube by means of three stiff wires up into the stopper. This inverted cone served to diffuse effectively any dust blown through the tube into the jar into a very fine air suspension of particles which settled more or less rapidly depending upon their respective sizes.

The chemical to be examined was diluted with talc and a 0.1 gram sample carefully deposited in the larger arm of the glass tube extending from the stopper of the bell jar parallel with its base. A hand bellows was attached to the tube and by one pump of the bellows the powder was neatly blown into the bell jar over the metal case so as to form a fine air dispersion. The insects were picked up in 30 minutes for observation. The amount of chemical used corresponded to the one third ounce per acre customarily used in forest dusting.

No chemicals had been found which approached DDT or its fluorine analog ("Gix") in efficacy. In general, the latter gave quicker killing power but the DDT lasted much longer.

CHEMICALS of the DDT type were tested as contact poisons against mosquitoes (mosquitocides) at Eberfeld. The method consisted of confining 10 of the insects in a small muslin-covered cage (10 centimeter cube) from which the covers could be removed for treatments. In order to test a mosquitocide, the substance was dissolved in a suitable organic solvent such as acetone, alcohol or ether and the covers immersed and dried. Th next day, generally after about 16 hours drying, the mosquitoes were placed in the cage and the effect observed. If an effect was shown. the cages were stored and the test repeated after 14 days *without retreating the muslin* and again stored if it was still effective and so on until the mosquitocidal effect of the muslin disappeared. The results were classified as:

Active—80—100% dead.

Trace—40—70% dead or injured.

Slight—20—30% dead or injured.

Using the above method, it was reported that "Gesarol" was effective after 12 months and testing was discontinued after that time. No other chemical appeared to approach that duration so the attention was turned to the testing of repellent effects.

B. Testing Oral Poisons

THE only testing of stomach or ingested insect toxicants which was active at the time of these investigations was the work being conducted at the experimental farm of the I. G. Farbenindustrie at Limbergerhof near Ludwigshaven. This had been a large institution before the war. Due chiefly to the lack of personnel, very little testing of insecticides had been conducted recently. At the time of the writer's visit in August, 1945, a study of the relative activities of "Lauseto"

(a mixture of DDT, DDD and the other related compounds formed by the German method of manufacture. See the first paper of this series, January, 1946) and "Gesarol" (the Swiss product containing DDT) was being made, using the Colorado Beetle on tomato plants. These tests were being conducted both in the laboratory and in the field as follows:

(a). Indoor tests.

Potato leaves were sprayed with a series of concentrations of Gesarol and Lauseto ranging from 0.25 to 5 per cent, according to two methods. The first method consisted of spraying the leaves with a common hand spray until wet. No effort other than judgment of the operator was used to obtain a uniform deposit. The leaves were then allowed to dry and the insects placed upon them confined in petri dishes. Both adults and instars were used, generally ten of each.

The results had not been recorded as the tests were still under way. The director stated that the results so far showed that Lauseto at 0.25—0.50% was equivalent to Gesarol at 3.0%. Also he pointed out the more rapid action of Lauseto which prevented feeding, while the leaves treated with Gesarol had been consumed by the beetles before they died. He was not familiar with "Lauseto-neu".

(b). Field tests.

The second series of tests using the Colorado Beetle was being conducted outdoors under conditions approximating as closely as possible those naturally encountered. Mature plants were segregated and the soil leveled and packed tightly about them to prevent escape of the insects. The plants were sprayed with the various concentrations of Gesarol and Lauseto respectively, allowed to dry an hour and the insects counted onto the treated plant. The whole plant was then covered with a glass box approximately two feet on each edge and provided with ventilation so that the temperature elevation caused by the glass enclosure was not unduly high. It was stated that they were able to account for at least 90% of the insects at the end of the test by this method, so that the results should be quite accurate. The remainder got away by burrowing in the grass.

Here again, the indications were that Lauseto at 0.25—0.50% gave a control equivalent to that given by 3% Gesarol. Namely, 100% kill of both adults and instars.

MOSQUITO REPELLENT TESTS ON THE FOREARM

Substance Tested	1	2	3	4	5	6	7
Benzyl alcohol	T	A	T	N	—	—	—
4-Methoxybenzyl alcohol	A	A	T	N	—	—	—
4-i-pr-benzyl alcohol	A	T	N	—	—	—	—
Dimethyl benzyl alcohol	A	T	N	—	—	—	—
Ethyl benzyl alcohol	A	T	T	T	N	—	—
a-Napthyl alcohol	A	A	A	A	T	T	T
Phenoxyethanol	A	A	T	N	—	—	—
Benzylacetoacetic ester	A	A	A	A	N	—	—

Legend: A = Active T = Trace effect N = Negative

C. Testing Insect Repellents

As mosquitoes are not a very troublesome pest in Germany, very little had been done before the war in regard to insect repellents. Hence, no testing methods had been developed. A few individual workers had concocted repellents consisting of oils and ointments which were very obnoxious and of doubtful value. The chemists at Hochst-I. G. Farbenindustrie had also prepared some ointments and had offered them for sale through the Baeyer organization. However, all chemists interviewed complained that there was no means of accurately testing repellents due to the wide variance in the individual susceptibility of persons to mosquito attack. In view of the loose testing techniques shown elsewhere, this statement was somewhat surprising. The most reliable testing previous to the war appears to have been done in the laboratories of Dr. Walther Kikuth, expert on tropical diseases at Eberfeld. He became interested in repellents as a means of chemical prophylaxis against malaria. Although the I. G. Farbenindustrie attempted to market a repellent called "Mipax" through a subsidiary in 1937-1939, it met with little success. It was not until the military demanded such materials during the war that serious research for effective repellents began. The United States was far ahead in this field. "Indalone", used by our armed forces through the war, had been discovered by the writer in 1934.

Although the testing methods used by the Germans were similar to those used here, they compared even more unfavorably with ours than did their fly spray method with the Peet-Grady procedure. In general, the efficacy of a chemical as a repellent was examined by topical application to the forearm and exposure to the attack of *Aedes aegypti* and *Culex fatigans* in cages. No attention was given to certain details and refinements which are regarded as very critical in this country. For example, the biting density or control was not determined, nor was temperature or humidity controlled. In general, the number of tests was far too small to have significance, a fault which seemed to prevail throughout the work.

The repellent effect of a preparation was determined by two methods:

(a). The forearm was rubbed with the material to be tested dissolved in a solvent. (Usually 7.5% in alcohol-water solution was employed in the initial test.) One hour after this application, the first test was made by holding the arm in a cage containing about 300 mosquitoes (males and females in about equal proportions). The mosquitoes were confined in cages about 30 x 40 centimeters. The material was regarded as having a repellent effect if no bites were obtained during a five minute exposure. If no more than *four* bites were obtained, the result was considered as a "trace" effect and if five bites were shown during the exposure, whether the full time had elapsed or not, the material was regarded as worthless. No count was made when the insects alighted but failed to bite except the observation of a "space effect" as a generality iin the case of no "landings".

(*Turn to Page* 173)

DDT Against House Flies

The comparative toxicity to houseflies of p,p' DDT, o,p' DDT, and Pyrethrum Extract

By W. A. GERSDORFF

Bureau of Entomology & Plant Quarantine
U. S. Department of Agriculture

ANALYSES have shown that the technical grades of the promising new insecticide DDT consist largely of the para-para' isomer but contain also, along with other compounds, some of the ortho-para' isomer.[2] Previous work has shown that the former is exceedingly toxic to houseflies, but little is known of the toxicity of the latter. Accordingly, a study has been made of the comparative toxicity of these two compounds. Included in the study were tests on pyrethrum extract, the usual standard of comparison for housefly sprays.

Pure samples of the synthetic compounds, the para-para' and ortho-para' isomers of 1-trichloro-2,2-bis (chlorophenyl) ethane,[1] were used. The melting point of the para-para' isomer was 107-108° C. and of the ortho-para' isomer 74.3-74.7°.

The pyrethrum standard solutions were prepared from a pyrethrum-kerosene extract, and chemical determination of the pyrethrins content[1] was made at the time of testing. The analysis showed that in this extract 54 per cent of the total pyrethrins was pyrethrin I and cinerin I.

Refined kerosene was the solvent used in all the sprays.

Procedure

The tests were made by the turntable method on adult houseflies, *Musca domestica* L., reared by standard procedure.

[1] Furnished by the Division of Insecticide Investigations, Bureau of Entomology and Plant Quarantine.

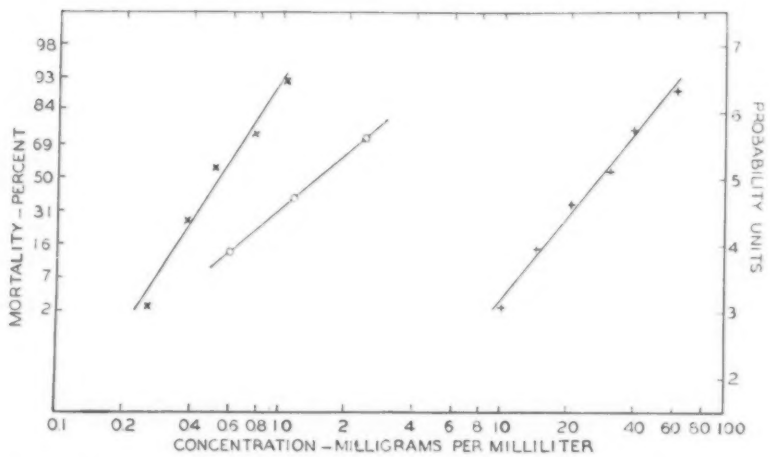


Fig. 1.—Toxicity to houseflies of p,p'-DDT (x); o,p'-DDT (+); and pyrethrum extract (o).

Preliminary tests were made with the DDT compounds to ascertain the concentrations that would give a wide range of mortalities. Knock-down and mortality percentages were determined on 8 replicates at each concentration with approximately 150 flies to each test. The mortality figures were based on 1-day counts.

Results

The toxicity data are summarized in table 1. To illustrate the course of toxic action for each material, the mean mortalities are plotted in figure 1 on semilogarithmic paper, with the ordinates adapted to a probability scale and straight lines fitted to the points by the method of least squares. The mean concentrations giving 50 per cent mortality in table 1 are not the concentrations determined from these means. In each replication an individual line was fitted, and the concentration required for 50 per cent mortality was estimated from this line. These 8 estimates were averaged to secure the mean concentrations given in table 1. The standard errors were obtained from an analysis of variance of the logarithms of these concentrations, the standard errors of concentrations being determined from those of logarithms.

The knock-down effect of *o,p'*-DDT was very similar to that of the *p,p'* derivative in the ranges of toxic action studied, only small percentages of flies being knocked down at these concentrations of sprays. These flies were active, though unable to fly; practically none were immobilized as when pyrethrum extract was tested. The knock-down obtained with the extract was complete in all the tests.

TABLE 1.—Toxicity to adult houseflies of the para-para′ and ortho-para′ isomers of DDT as compared with that of pyrethrum extract when applied in kerosene sprays.

Compound	Concentration	Knock-down in 25 minutes	Mean Mortality in 1 day	Mean concentration causing 50% mortality	Ratio of toxicity at 50% mortality level
	Mg. per ml.	Per cent	Per cent	Mg. per ml.	
p,p′-DDT	1.50	25	100	0.511±0.015	2.82±0.12
	1.00	11	93		
	0.750	6	74		
	.500	3	57		
	.375	2	26		
	.250	1	3		
o,p′-DDT	60	18	91	27.2±0.78	0.0529±0.0022
	40	14	78		
	30	6	55		
	20	3	36		
	15	1	14		
	10	2	3		
Pyrethrins ...	2.36	100	74	1.44±0.041	1.00
	..1.18	100	40		
	..0.59	100	14		

It may be noted that at the 50 per cent mortality level, *p,p′*-DDT was 2.8 times as toxic as the pyrethrum extract, whereas in a former study[1] the ratio was found to be 2.0. This difference, which is not too great when the differing conditions, such as populations of flies, temperature, and humidity, are considered, may be due in part to the use of different pyrethrum extracts as standards. Although the two standards contained nearly the same relative amount of pyrethrin I and cinerin I (55 per cent for the older study and 54 for the present) in the total pyrethrins, they were from very different sources, the original samples of pyrethrum flowers having had different cultural treatments and the extracts different subsequent treatments. From new demonstrations of the greater complexity of such extracts[2] and of the differing toxicity of the constituents,[3] the toxicity of such extracts may be expected to vary somewhat.

Conclusions

The data in table 1 and in the graph (fig. 1) show that, when estimated by the comparison of the concentrations causing 50 per cent mortality, *p,p′*-DDT was 53 times as toxic as *o,p′*-DDT. This ratio did not differ greatly throughout the course of toxic action, being 44 at the 10 per cent mortality level and 60 at the 90 per cent level.

When these two compounds are compared with the pyrethrum extract, the variation of the ratio with change of mortality level was relatively greater, the ratio ranging from 1.7 to 4.4 for *p,p′*-DDT and from 0.038 to 0.073 for *o,p′*-DDT.

The knock-down effect of *o,p′*-DDT in 25 minutes was very similar to that of the *p,p′*-DDT, both of which were much less effective than the pyrethrum extract.

[2] La Forge, F. B., and W. F. Barthel. Unpublished manuscript.
[3] Gersdorff, W. A. Unpublished manuscript.

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Pests of Truck Crops

A number of pests of truck crops can be controlled with DDT aerosols, although some insects such as the harlequin cabbage bug are resistant. Heavy aerosols producing larger droplets were generally more effective than lights aerosols; 6 per cent of DDT was about as effective as 10 per cent in these preparations. Lima beans and snap beans were the only susceptible plants noticed, and injury occurred to these crops only from aerosols containing large proportions of cyclohexanone. Aerosols containing nicotine or derris resins were either less toxic than DDT aerosols or ineffective. F. F. Smith, L. P. Ditman, and L. D. Goodhue. *J. Econ. Entomol. 38*, 189-96 (1945).

Waxes from Lignite and Peat

Montan wax, a hard ester wax obtained from the lignites of Saxony and Thuringia by extraction with solvents, is dark brown, hard and odorless, with a melting point of about 80°C. Early in the war a substitute was required, and an investigation was required, and an investigation was made of the suitability of the ester waxes in British lignite and peat. The extraction of wax from Devon lignite and various English and Scottish peats was studied, and lignite wax was found to provide a satisfactory substitute. Devon lignite wax was found to provide a satisfactory substitute. Devon lignite wax is not dissimilar from montan wax, but peat wax is softer in texture and has a lower melting point by 10-15°C. The yield of wax obtainable by benzene extraction is 5 per cent for clean dry Devon lignite, and varies from 3 to 12 per cent for peats. The yield and properties of the wax depend to a considerable extent on the type of solvent used. C. M. Cawley and J. G. King. *J. Soc. Chem. Ind.* 64, 237-42 (1945).

Insecticidal Mexican Plant

The roots of the Mexican plant *Erigeron affinia* OC, when finely ground and exhaustively extracted with petroleum ether, gave a residue from the petroleum ether extract having the same toxicity to houseflies as pyrethrins. F. Acree, Jr., M. Jacobson and H. L. Haller. *J. Org. Chem.* 10, 236-42 (1945).

Mixed Insecticide

An insecticidal mixture consists of 5-10 per cent each of pyrethrum and sodium fluoride or sodium fluosilicate, and 40-80 per cent of powdered dextrin. It may also contain sulfur or peanut flour. S. Marcovitch, to The University of Tennessee Research Corp. U. S. Patent No. 2,377,798.

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Evaluating Pyrethrum Extract

A comparison of chemical and biological methods of evaluating concentrated extracts

By W. F. BARTHEL, W. A. GERSDORFF, F. B. LAFORGE
Bureau of Entomology & Plant Quarantine

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MANUFACTURERS of purified pyrethrum extract (90 to 100 per cent pyrethrins) made by the nitromethane-charcoal process of Barthel *et al.*[2] have reported discrepant results when the product has been analyzed by the Seil[8], A. O. A. C.[1], and hydrogenation[6] methods.

In order to determine which of these methods yields results that most closely correspond to the results of a biological assay, a quantity of purified pyrethrum extract was prepared by the nitromethane-charcoal process and analyzed by the three methods mentioned. In addition, pyrethrin II was determined by the methoxyl method (Haller and Acree[5]).

Results of analyses by the several methods are reported in table 1. It has been recognized for some time that the results obtained by the Seil method depend upon the presence of extraneous acids, not removed by barium precipitation, which compensate for the chrysanthemum monocarboxylic acid decomposed on steam distillation in the presence of mineral acids[3,4,7]. This method has given definitely low results as compared with the other methods.

To find out whether the pyrethrins submitted to this purification process retained their full insecticidal activity, tests were made on several preparations to determine their relative toxicity when used in oil sprays. The spray materials were prepared by dissolving the extracts in deodorized kerosene at selected concentrations based on the A. O. A. C. analyses. They were then tested by the turntable method on adult houseflies (*Musca domestica* L.) reared by standard procedure. The toxicity data are summarized in table 2.

A.O.A.C.			SEIL			HYDROGENATION METHOXYL			
Pyrethrins			Pyrethrins			Pyrethrins			Pyrethrin
I	II	Total	I	II	Total	I	II	Total	II
Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent
53.2	42.9	96.1	43.5	39.4	82.9	50.5	39.7	90.2	32.2
53.3	43.3	96.6	42.8	39.1	81.9	53.2	39.2	92.4	36.0
47.9	43.3	91.2	44.8	40.7	85.5	51.2	41.6	92.8	34.0
51.2	44.3	95.5	41.9	46.0	87.9	53.7	40.5	94.2	33.0
49.4	47.1	96.5	50.9	37.4	88.3				35.6
48.5	47.1	95.6	52.2	42.5	94.7				
			44.6	...	...				
			42.7	...	...				
			43.9	...	...				
			43.7	...	...				
Av.									
50.6	44.7	95.3	45.1	40.9	86.0	52.2	40.3	92.4	34.2

TABLE 1.—Analyses for pyrethrins I and II by several methods on a sample of purified pyrethrum extract prepared by the nitromethane-charcoal process.

The mortality percentages are based on 1-day counts. All sprays caused complete knock-down of flies at the concentrations used, which was to be expected if there was no great loss in insecticidal activity. The samples A to E are listed in the order in which they were prepared and tested. Sample B was the sample used to obtain the analytical data in table 1. Sample E is a portion of sample B that was stored for 10 months in a refrigerator at 2° C. The standards of comparison were sprays made from a pyrethrum extract the pyrethrin content of which had been determined by the A. O. A. C. method. Approximately 150 flies were used in each test.

A commercially prepared pyrethrum concentrate (20 per cent for aerosols) kept in storage at room temperature showed a continuous loss of toxicity to flies. Chemical analysis revealed that at the end of 8 months there was a 27 per cent loss of pyrethrins. Sample E, which was purified by the nitromethane-charcoal process and allowed to stand 10 months, was tested for comparison.

An analysis of variance of the tests with the A and E samples of purified concentrate, the series in which the largest numbers of replicates were made, showed that to be significant a difference between mean mortalities had to be at least 8 per cent for the A series and 4 per cent for the E series. The least significant

TABLE 2.—Toxicity to houseflies of kerosene sprays made from concentrates of pyrethrum purified by the nitromethane-charcoal process as compared with the toxicity of standard pyrethrum sprays.

Sample	*Tests*	*Pyrethrum Spray*	*Mortality of houseflies at total pyrethrin levels of* 1 *mg. per ml.*	2 *mg. per ml.*
	Number		*Percent*	*Percent*
A	8	Purified[1]	25	..
	4	Standard	25	54
B	2	Purified	8	23
	2	Standard	12	25
C	4	Purified	29	63
	2	Standard	33	67
D	2	Purified	21	47
	2	Standard	30	56
E	10	Purified	13	37
	10	Standard	14	38

[1] At concentrations of 1.2 and 1.4 mg. per ml. mortalities of 29 and 34% were obtained, the means of 8 tests. These values may be compared with the mortalities of 32 and 38%, interpolated for the same concentrations from the curve for the standard.

difference is much higher in the other series, in which only a few replicates were made. Therefore, insofar as all the tests are concerned, no difference has been demonstrated between the insecticidal activity of the purified concentrate and that of the standard pyrethrum extract, and it may be said that the purified concentrate not only has undergone the purification process without loss of activity of the pyrethrins but has also retained its full activity for at least 10 months.

It is true that the small differences found for comparable concentrations regularly suggest a lower toxicity for the concentrate but, even if many replications brought these within the range of statistical significance, they might well be a reflection of the chemical differences in the two types of pyrethrin mixtures. It is shown that over a considerable period of time there is no material change in this relationship. According to chemical analysis by the A. O. A. C. method, the only method used for the standard extracts, the percentage of pyrethrin I to total pyrethrins is higher in the standard extract than in the purified material, namely, 55 per cent as compared with 53 per cent. Since pyrethrin I causes higher mortality of houseflies than pyrethrin II[9], the standard should be slightly more toxic at comparable concentrations.

Summary

Chemical analyses of a sample of purified pyrethrum extract prepared by the nitromethane-charcoal process show that the Seil method gives consistently lower results than either the A. O. A. C. or the hydrogenation method. Biological comparisons against houseflies (*Musca domestica* L.) of sprays prepared according to the A. O. A. C. evaluation show that the pyrethrum preparation underwent the purification process without loss of insecticidal activity and retained its full activity for 10 months when kept in the refrigerator at 2° C.

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Lime-Sulfur Sheep Dip

The change in composition of lime-sulfur fluid having an initial concentration of 1 per cent weight to volume of polysulfide sulfur, was followed during 4 dipping trials on sheep, one in a swim dip and 3 with power sprays. In the swim dip the polysulfide sulfur concentration and the polysulfide ratio remained at effective levels throughout dipping. Negligible decrease in polysulfide sulfur concentration was noted in the undisturbed dip overnight. Successful use of lime-sulfur in power-spray units required at least 200 gallons of fluid in circulation. J. L. Hill. *J. Council Sci. Ind. Research* 18, 201-8.

Control of Body Lice

Alkyl thiocyanates with the chain length of the alkyl group varying from C_8 to C_{18} were studied. The higher members of the aliphatic thiocyanates show a sudden drop in toxicity to lice. The lowest members are especially toxic to mammals. Dodecyl thiocyanate offers the best compromise between toxicity to insects and safety to man. The wearing of sprayed fabric reduced the effectiveness of the treatments. Calico impregnated with 1-3.5 milligrams of active principle per square centimeter and worn next to the skin gave the following results: 50 per cent lauryl thiocyanate was best, giving 100 per cent toxicity for 22 days; 25 per cent lauryl thiocyanate gave 100 per cent toxicity for 16 days; 25 per cent Lethane 384 gave 100 per cent toxicity for 10 days. The toxic effects of all materials tested was lost when treated fabric was washed thoroughly with soap and water. A Lethane belt of calico worn next to the skin gave promising results. All thiocyanates are liable to cause irritation to the human skin, especially during heavy manual labor. J. R. Busvine. *Bull. Entomol. Research* 36, 23-32 (1945).

DDT and Temperature Effect

Adult houseflies, *Musca domestica*, were exposed at various temperatures and periods of time to DDT-treated surfaces. Continuous exposure at 21.1°C. caused a more rapid knockdown than at higher temperatures. Flies exposed to pyrethrum residue revealed a more rapid knockdown at 35°C. than at 21.1°C., the opposite of the temperature effect with DDT. Although temperature may influence the effectiveness of DDT to houseflies, it is effective over a wide temperature range. A. W. Lindquist, A. H. Madden, H. G. Wilson, and E. F. Knipling. *J. Econ. Entomol.* 38, 257-61 (1945).

DISINFECTANTS AND ANTISEPTICS

A Summary of Scientific Advances Reported During 1944 and 1945.

By

Dr. Emil G. Klarmann

Plaut Research Laboratory
Lehn & Fink Products Corp.

PART II

Antibiotics

THERE has been great activity in the field of antibiotics over the past two years. Since the time of the last report whole industrial plants have been erected which extract penicillin in quantities sufficient to serve all medical needs. Antibiotic materials other than penicillin are gaining importance at a rapid pace.

(a) Penicillin

A. C. Hunter and W. A. Randall (74) supplied a description of a master standard of pure sodium penicillin with a potency of 1650 Oxford units per milligram, and of a secondary calcium penicillin standard of 370 units per milligram.

A rapid assay method for penicillin has been suggested by A. Wilson (75). It depends upon the inhibition by penicillin of the growth of group A beta-hemolytic streptococci, a 5 per cent suspension of washed sheep cells being used as indicator. The proposed method of G. Rake and H. Jones (76) also utilizes the hemolytic action of beta-hemolytic streptococci; results of the test may be read as early as in 55 to 90 minutes. A simplified method of the agar-cup assay has been described by L. S. Cholden (77).

The stability of sodium penicillin held at various temperatures is the subject of a paper by W. A. Randall, H. Welch and A. C. Hunter (78).

Sir Alexander Fleming, discoverer of penicillin published a comprehensive review (79) covering the discovery, development and use of penicillin in medicine and surgery. A review documented by numerous references was prepared by W. Van Winkle, Jr. and R. P. Herwick (80).

According to H. W. Florey, N. G. Heatley, M. A. Jennings and T. I. Williams (81), penicillin-like antibiotics are produced by the following species of *Penicillium*: *P. fluorescens, P. rubrens, P. avellaneum, P. baculatum* and *P. turbatum.*

L. A. Rantz and W. M. M. Kirby (82) find by means of a photoelectric turbidimetric technic that in vitro penicillin is bactericidal for staphylococci by causing lysis; however, a few organisms remain alive even after prolonged exposure to it. According to G. L. Hobby (83) penicillin exerts an antibacterial effect upon Gram-negative as well as Gram-positive organisms. The property of affecting Gram-negative bacteria becomes apparent in high potency preparations from which the opinion is drawn that a form of penicillin may exist which shows a greater activity with respect to Gram-negative microorganisms.

The paper by S. W. Lee, E. J. Foley and J. A. Epstein (84) explores penicillin's mode of antibacterial action.

Highly purified preparations of penicillin were tested by A. Fleming, H. W. Florey, D. C. Bodenham and E. C. Cutler (85). They were found to inhibit the growth of staphylococci and streptococci in the phantastic dilutions of 1:50,000,000 to 1:100,000,000 while producing morphological changes in 1:256,000,000. Among the most sensitive organisms are the gonococci, meningococci, streptococci, pneumococci, staphylococci, anthrax bacilli and clostridia.

(b) Antibiotics Other Than Penicillin

In the more recent past, other antibiotics were isolated from various sources. Some, notably streptomycin, already have gained considerable chemotherapeutic importance. The work of Waksman and his collaborators is particularly significant in opening up this new field of great potential fertility. Master and working standards have been prepared by the Food and Drug Administration for pure streptomycin sulfate and hydrochloride.

The method of isolation of fungi with antagonistic properties directed against bacteria depends upon the following steps, as described by S. A. Waksman and E. S. Horning (86). The agar plates are seeded with various bacteria, then after 12 to 24 hours they are inoculated with samples of soil or manure; or washed suspensions of bacteria are added to agar used for plating soil or manure. Only

* Before the Dec. 3rd meeting of the National Association of Insecticide and Disinfectant Manufacturers, Inc., New York, Dec. 3, 1945.

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such organisms are selected for further work which show a clear zone between the fungus colony and that of the test bacteria, the latter being one of the following: *B. subtilis, Sarc. lutea, Staph. aureus* or *Esch. coli.*

Antibiotic substances are bactericidal as well as bacteriostatic in action, according to S. A. Waksman and H. C. Reilly (87). Some of them may fail to stop the growth of all bacterial cells in a given population which leads to a gradual adaptation of the survivors to the antibiotic action; others may bring about complete destruction of all cells. The concentration plays an important role, of course. Following are the inhibitory concentrations of four antibiotics:

Antibiotic	*Staph. aureus*
Penicillin	1:5,000,000
Clavacin	1:50,000
Actinomycin	1:6,000,000
Streptothricin	1:500,000

It is of considerable interest that certain antibiotics display also anti-fungal action. Thus according to J. A. Herrick (88) 0.02 per cent of clavacin inhibits the growth of *Trichophyton gypseum* while 0.5 per cent of it kills this fungus in 15 to 45 minutes. *Monilia albicans* is killed in 45 minutes to 3 hours.

Chetomin is a new antibiotic substance produced by *Chaetomium cochliodes* and isolated by S. A. Waksman and E. Bugie (89). A fraction has been purified to the extent of 500,000,000 *Staph. aureus* units per cc. This material is similar in some respects to tyrothricin, but different in others.

Patulin previously obtained from *Pencillium patulum* (Bainter) is also a metabolic product of *Penicillium expansum* (Link) the organism responsible for apple rot, according to W. K. Anslow, H. Raistrick and G. Smith (90). Clavatin from *Aspergillus clavatus* is identical with claviformin from *Penicillium claviforme*, and probably also with patulin from *Penicillium patulum*, according to F. Bergel, A. C. Morrison, A. R. Moss, R. Klein, H. Rinderknecht and J. L. Ward (91). Each of them has an inhibitory action with respect to *Staph. aureus* in dilutions of the order of 1:64,000 to 1:128,000. Beta-propyl-gamma-butyrolactone has been identified as a product of reductive degrada-

J. W. Foster and H. B. Woodruff (92) found streptothricin inhibitory for nine out of twelve genera of yeasts, four out of seven pathogenic fungi and —ten out of nineteen saprophytic fungi. Subinhibitory concentrations of streptothricin and penicillin became inhibitory when acting in concert, the effect being an additive one. Streptothricin was most effective against *B. subtilis* and *Esch. coli* in alkaline media.

Subtilin is an alcohol soluble, antibiotic substance generated by *B. subtilis* and isolated by E. F. Hansen and D. J. Hirschmann (93). It is active against *Staph. aureus, Strept. viridans, Micrococcus conglomeratus* and *Lactobacillus casei.* It is inactivated by methyl alcohol, formaldehyde and light. It shows no effect upon *Eb. typhi.*

B. subtilis	*Esch. coli*	*Ps. aeruginosa*
1:19,000	1:<5,000	0
1:65,000	1:100,000	1:5,000
1:60,000,000	1:15,000	0
1:1,000,000	1:100,000	1:1,000

Chromobacterium violaceum produces a violet pigment violacein which is markedly inhibitory for Gram-positive bacteria according to H. C. Lichtstein and V. F. Van de Sand (94). It inhibits the growth of Gram-negative bacteria only to a slight degree except for *Neisseria meningitidis* which is highly susceptible to its action. The anti-bacterial effect is impaired by sheep serum.

Another new antibiotic is corylophilin, isolated by H. Penau and G. Hagemann (95) from *Penicillium corylophilum Dx.* It is claimed to be bacteriostatic for *Staph. aureus* in a dilution of 1:100,000,000, for *Streptococcus (hemol.)* in 1:1,000,000 and for *Esch. coli* in 1:1000; it is lytic for *Trypanosoma equiperdum* in 1:100,000. The presence of blood serum interferes with its effect on *Staph. aureus.*

The growth of tubercle bacilli and of related microorganisms is strongly inhibited by steptomycin, streptothricin, chetomin, fumigacin, clavacin, actinomycin and gliotoxin, according to A. Schatz and S. A. Waksman (96). *Actinomyces griseus* the organism producing streptomycin contains a second antibiotic factor which is more active against the avian than against the human type of *Mycobacterium tuberculosis,* while streptomycin is more active against the former.

Streptomycin has gained considerable importance in the recent past and its production on a large scale has begun.

Not only microorganisms, but also plants produce antibiotic substances. Thus Spanish Moss (*Tillandsia usneoides*) yields an antibacterial extract which is effective against all Gram-positive bacteria, but not against *Hemophilus influenzae, Esch, coli, B. proteus* and *Ps. pyocyanea;* the pertinent experiments were carried out by J. T. Weld (97). From the petals of *Crepis taraxalifolia* N. G. Heatley (98) isolated crepin (of the tentative brutto formula $C_{14}H_{16}O_4$) which is inhibitory for *Staph. aureus* in a dilution of 1:32,000, but is less effective against other bacteria. From the garlic, *Allium sativum,* C. J. Cavallito and J. H. Bailey (99) isolated allicin which is active against both Gram-positive and Gram-negative microorganisms; the structure of allicin is assumed to be $C_3H_5S(=O)SC_3H_5$ although the possibility of its being $(C_3H_5S)_9O$ has not been eliminated (100). According to G. W. Irving, Jr., Th. D. Fontaine and S. P. Doolittle (101) the tomato plant produces lycopersicin, a fungistatic agent. Canavalin extracted from soyabean or Jack-bean flour is inhibitory for both Gram-positive and Gram-negative bacteria, according to D. L. Farley (102).

As to the chemistry of antibiotics, no significant progress can be reported, as indicated before. However, A. N. Belogerski and T. S. Passkina (103) found that gramicidin S yielded the following upon hydrolysis: orni-

C. M. McKee, D. M. Hamre and G. Rake (104) arrange the antibiotics and sulfadrugs in the following order of decreasing in vitro bacteriostatic potency with respect to the anaerobes of the gas gangrene group: tyrothricin, penicillin, sulfadiazine, sulfathiazole, aspergillic acid, gliotoxin, sulfanilamide.

According to W. M. M. Kirby (105) penicillin, sulfanilamide and

penicillin-urea mixtures are more active in vitro than penicillin alone against *Staph. aureus.*

Miscellaneous Antibacterial Agents and Actions

UNDER this heading reference will be made to published information which cannot be grouped in any of the preceding chapters.

F. Neufeld and O. Schiemann (106) regard 75 per cent ethyl alcohol as a better hand disinfectant than mercuric chloride or saponated cresol. The disinfectant effect increases with the daily use of alcohol. They recognize that some hands are very difficult to "disinfect." Z. Meyer and E. E. Vicher (107) credit 70 per cent alcohol with germicidal effectiveness when in contact with the skin for one minute. While a 0:5 per cent solution of hydrochloric acid is claimed to make a good skin antiseptic, a 10 per cent potassium alum solution is not recommended for this purpose as it tends to imprison the bacteria under a hardened skin coating.

When organic gold or silver compounds are reduced by soluble aluminum, thorium or zinc formates, the noble metals are precipitated, e.g., on cotton gauze, yielding material for wound dressing with antibacterial action. This process is described in a U. S. patent granted to I. Kreidl and W. Kreidl (108).

According to H. C. Lichstein and M. H. Soule (109), sodium azide in concentrations of 0.01 to 0.03 per cent is bacteriostatic for Gram-negative microorganisms. Only three out of 41 strains of *Ps. aeruginosa* grew in the presence of 0.03 per cent of the azide, while streptococci, pneumococci, lactic acid bacilli, also anaerobes were resistant to it; Gram-positive spore forming aerobes, *Staph. aureus Staph. albus* and *C. diphtheriae* were moderately resistant.

Z. Baker and B. F. Miller (110) obtained a U. S. patent covering secondary alkyl sulfates of the general formula $R_1R_2CHSO_4X$, where R_1 and R_2 are alkyl groups, either or both being branched, X is a cation such as sodium, ammonium, calcium, etc., or an organic amine. An example is furnished by sulfated 3,9-diethyl-6-tridecanol which inhibits the growth of *Staph. aureus* and *albus* in a dilution of 1:3000. The compounds comprised under this patent are suitable for use in antiseptic ointments, liquid dentifrices, etc.

A germicidal composition with formaldehyde as the active agent which is suitable for the treatment of surgical instruments, is described in a U. S. patent issued to A. L. Waugh (111).

H. Barber (112) found 4,6-dimethoxytoluquinone to be powerfully bacteriostatic for *Staph. aureus* and *Strept. (hemol.);* however, owing to a great reduction of this effect by blood or serum, and because of the marked antileucocytic properties of the compound it is not suitable as a therapeutic agent. J. G. Page and F. A. Robinson (113) attempted to correlate the reduction potentials of a number of quinones with their bacteriostatic action.

Sodium propionate is an effective fungistatic agent, according to E. L. Keeney (114). At a pH of 5.5 a 1.25 per cent of this salt inhibits the growth of *Trichophyton purpureum, Epidermophyton inguinale, Microsporon audouini* and *Candida albicans;* a 0.125 per cent solution is bacteriostatic for *Trichophyton gypseum* and *violaceum, Epidermophyton rubrum* and *interdigitale, Trichophyton schoenleinii* and *Microsporon lanosum;* a 0.0125 per cent concentration is inhibitory for *Blastomyces dermatitidis.*

In the absence of organic matter, mandelic acid in moderate concentrations has a rapid in vitro disinfectant action upon staphylococci, according to G. Sternberg (115).

M. C. Dodd, W. B. Stillman, M. Roys and C. Crosby (116) investigated the bacteriostatic action of a number of derivatives of furan, 2-furaldehyde, furfuryl alcohol and 2-furoic acid. The presence of a nitro-group in the 5-position of the furan ring confers considerable bacteriostatic power in varying degrees upon the compounds of this type.

Indican was found to be bacteriostatic as well as bactericidal for staphylococci, streptococci and tubercle bacilli, by H. Kliewe and K. Rabe (117).

A. Goth (118) studied the inhibitory effect of dicoumarol upon 14 bacterial species.

According to L. Weinstein and A. McDonald (119), urethane, butyl carbamate and propyl urea are bacteriostatic or bactericidal (depending upon the concentration employed) for Gram-negative bacteria, and to a lesser extent also for the Gram-positive ones. They also antagonize the inhibitors of sulfadrugs, and increase the solubility of the latter.

The German drug "Syntobilin" is the diethanolamine salt of the camphoric acid ester of p-tolylmethylcarbinol. B. Kemkes (120) represents it as being strongly bactericidal for hemolytic streptococci, staphylococci and enterococci.

For some time, the problem of antibacterial agents for *B. pyocyaneus* has been of particular interest to English workers. H. Berry (121) found in ethyleneglycol monophenylether ("Phenoxetol") a substance with a pronounced efficacy with respect to this microorganism; its effect is less against *B. proteus, Esch. coli* and *Streptococcus.* However, since it is compatible with penicillin and the sulfonamides, as well as with other antiseptics of little or no efficacy with respect to *B. pyocyaneus* it permits the preparation of non-specific compositions.

E. C. Stevenson and J. M. Mitchell (122) report 2,4-dichlorophenoxyacetic acid and its sodium salt to be growth retarding for *B. subtilis* and *Staph. aureus.*

The synthetic estrogenic materials are distinguished by anti-bacterial action, while the naturally occurring ones appear to be devoid of it. G. H. Faulkner (123) reports diethylstilbestrol and hexestrol to be bactericidal for Gram-positive cocci, *C. diphtheriae* and *N. catarrhalis* in adequate concentrations; in lower concentrations their action is bacteriostatic. Hexestrol kills tubercle bacilli in a dilution of 1:5000. Neither compound is effective against Gram-negative bacteria. Estrone and estradiol are inactive in this regard. G. Brownlee, F. C. Copp, W. M. Duffin and I. M. Tonkin (124) also observed strong antibacterial activity in a number of stilbestrol derivatives with re-

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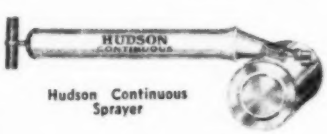

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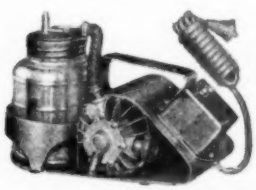
Hudson Duster



Hudson "Lektrik-Spray" Sprayer and Duster

spect to straphylococci and streptococci; this activity was not related to their estrogenic potency. The compound (4)$HOC_6H_4C(C_2H_5) = C(C_2H_5)C_6H_5$ exhibited the same germicidal efficacy as chloroxylenol; it was inactive in vivo. According to H. W. Groeger (125), solutions of testoviron, cortiron and progynon exert a strongly antibacterial effect upon *Esch. coli, B. subtilis, Staph aureus, B. anthracis* and pneumococci, but they are ineffective against *Eb. typhi.* Cortiron is resisted by *C. diphtheriae,* but not testoviron and progynon.

The vitamins, too, have an observable effect upon bacteria. Thus G. Krockert and I. Pohl (126) report that vitamin C. inhibits the growth of streptococci, influenza bacilli and of *Micrococcus catarrhalis* parallel to the concentration employed. While vitamin B_1 shows a growth promoting activity with respect to all bacteria, vitamin A causes inhibition. Vitamin D generally promotes growth whereas vitamin E is inhibitory. Vitamins B and D combined produce a more profuse growth than either alone. Vitamin C interferes with the effect of Vitamin D.

Antibacterial vapors of prophylene glycol were studied with regard to the optimal conditions for germicidal action by Th. T. Puck, O. H. Robertson and H. M. Lemon (127). Such conditions are: a temperature below 80° F. and a relative humidity of 45 to 70 per cent. The susceptibility to the vapor action of bacteria suspended in saliva is as great as that of bacteria suspended in broth. Both the partially and the completely dehydrated organisms succumb to the action of the vapor. However, when unsterile dust collected from inhabited rooms was dispersed in the air little reduction was observed of the natural microbic population contained in this material. Pneumococci are killed when the vapor contains 1 gram of propylene glycol in 20 million cc of air; to produce the same effect on streptococci and staphylococci 1 gram per 5 to 10 million cc of air is required.

Von Kapff's "acid therapy" calls for nebulization of a mixture of formic, acetic, hydrochloric and sulfuric acids, according to H. Kliewe and E. Früchte (128) although it is admitted that better results are obtained with propylene glycol, sodium hypochlorite, and one of the following combinations: hexylresorcinol - propylene glycol, or glycerol resorcinol-water-brilliant green. The mixture of ethylene glycol-resorcinol-alcohol-water is claimed to be superior as a germicidal mist to other combinations.

Theoretical and Methodological Studies

AN inquiry into the mechanism of disinfection by means of water-soluble bactericides is the subject of a paper by D. P. Evans and A. G. Fishburn (129). Like other workers before them, these authors regard the disinfectant effect as being comprised of the adsorption of the bactericide upon the surface of the microorganism, followed by a reaction between the adsorbed agent and an "active" protein group on the surface of the bacteria which results in coagulation of the latter. In the case of phenolic bactericides it is assumed that the rection takes place between the "active" protein and the hydroxyl radical. A similar mechanism postulated for adsorption by charcoal, is supported by the observation that for any given concentration (below 1 per cent) the amounts adsorbed per gram of charcoal correspond approximately to the order of increase in bactericidal power, as determined by the Rideal-Walker method. Another extensive study of the dynamics of disinfection is the subject of two papers by R. C. Jordan and S. E. Jacobs (130). The test-organism is *Esch. coli,* the bactericide is phenol.

O. Rahn and J. E. Conn (131) investigated the effect of acidity upon the antiseptic action. One of the results obtained is that undissociated benzoic, salicylic and sulfurous acids are capable of suppressing the growth of *Saccharomyces ellipsoideus.* The antiseptic efficacy of the undissociated form of weak organic acids has been reported previously by other workers.

Antibacterial action as affected by variation in the concentrations of resorcinol and m-cresol was studied by G. H. Spray and R. M. Lodge (132). Using *B. lactis aerogenes* as their test-organism they observed that both substances have a specific action upon the various stages in the cell metabolism. The action of resorcinol can be completely neutralized by the bacteria during growth, that of m-cresol only partially. At certain concentrations the test-organism undergoes a morphological change growing in the form of thread-like cells, many times their normal length.

The paper by S. W. Fox, M. Fling and G. N. Bollenbach (133) is of possible significance in connection with the mechanism of the antibacterial action of gramicidine. These workers found the growth of *L. arabinosus* to be inhibited by d-leucine in a medium in which the ratio of d-leucine to l-leucine was approximately 200:1. They assume that this is due to the interference of d-leucine with the bacterial metabolism by the normal laevorotatory form of this aminoacid, and that the action of gramicidin which is known to contain d-leucin as a part of its molecule may have some connection with this phenomenon.

A summarizing lecture on the mode of action of chemotherapeutic agents in the light of recent knowledge was given by R. J. Dubos (134). While the subject has been treated exhaustively from all angles the following theoretically significant reference deserves emphasis: In support of the theory of inhibition as a function of competition by substances which are structurally related to bacterial metabolites, it has been possible to synthesize several compounds which interfere with bacterial growth on these lines. Some examples are supplied by pyridine-3-sulfonic acid, aminosulfonic acids, thiopanic acid (pantoyltaurine) which bear the same relationship respectively to the "essential" nicotinic acid, aminocarboxylic acids and pantothenic acid that sulfanilamide bears to p-aminobenzoic acid.

As to methodological problems, the paper by C. M. Brewer (135) deserves very careful consideration. In referring to the objections against the phenol coefficient method of testing disinfectants, the author points to the fact that this method is being used to an ever-increasing degree for the testing

of products for which it was not intended originally; these newer preparations are being employed as substitutes for phenol, cresylic compounds, etc. which were handled satisfactorily by the phenol coefficient method. Thus far three features have been recognized as being mainly responsible for the inaccuracies obtained when testing the new products: (a) The inconsistency of the composition of the culture media, and particularly of the peptone; thus small variations in the phospholipid content of different lots of peptone exert a profound influence upon the germicidal performance of certain synthetic detergents and of coal-tar disinfectants fortified with synthetic wetting agents, (b) The tendency of the test-organisms to mutate between the rough and smooth forms which seems to affect the phenol coefficient of certain synthetics, (c) The size of the transfer in preparing subcultures; because of the marked surface activity of many of the newer disinfectants, the standard transfer loop removes varying amounts of material from the medication mixture with the result that there are considerable differences in the number of treated organisms carried into the subculture. The author also criticizes the misconception that the phenol coefficient method provides the means of delineating the usefulness of germicides whereas its use should be limited to the determination of the germicidal potential of a given substance, its specific value for a particular purpose to be ascertained by special applicable methods.

O. Rahn (136) proposed a new method of testing germicides which indicates the death rate for any disinfectant concentration without reference to phenol. The method elaborated by W. A. Randall and C. W. Price (137) is based upon the ability of antiseptics to inhibit the bacterial reduction of nitrates to nitrites. The F.D.A. strain of *Staph. aureus* is used as the test-organism. Various dilutions of the antiseptic are allowed to remain in contact with the broth culture of the microorganism for definite periods of time whereupon potassium nitrate is added. After incubation the presence or absence of nitrite is ascertained.

The correlation between the results of agar-plate (and agar-cup) tests and the phenol coefficient tests, or rather the absence of such a correlation is stressed in the paper by W. C. Tobie and G. B. Ayres (138). That neither the phenol coefficient method nor the agar-cup technic is capable of measuring the penetrating efficiency of disinfectants for cell membranes is shown by L. P. Anderson and W. L. Mallman (139). These authors recommend also the quantitative evaluation of disinfectants on the basis of the number of bacteria surviving exposures to various concentrations. A special finding shows colloidal iodine to be superior in penetrating power to crystalline iodine dissolved in alcohol, water or a potassium iodide solution. Other germicides have also been considered from this point of view.

The paper by E. G. Klarmann and E. S. Wright (140), dealing with the effect of organic matter upon the germicidal performance of different types of disinfectants inquires into the comparative practical values of the "high-powered" and "low-powered" varieties. The authors conclude that solutions of the proper strength possess more available antibacterial potency when prepared from "low-powered" concentrates (coal-tar, cresylic, certain synthetic phenolic, pine-oil) than those from "high-powered" ones (certain halogenated phenolic and quaternary ammonium compounds), since the former retain a substantially greater margin of disinfectant efficiency than the latter in the presence of "organic matter".

A method of separating bacteria and fungi with the aid of different selective bacteriostatic and fungistatic chemicals has been described by T. M. Eastwood (141).

Of interest to producers of pine-oil disinfectants will be the analytical procedure of determining pine oil in saponaceous pine oil emulsions, communicated by W. A. Kirklin and P. J. McLaughlin (142).

As indicated above, the lack of constancy in the composition of the nutrient media employed in culturing the test-organisms for disinfectant testing is one of the factors deemed to be relevant to the problem of reproducibility of quantitative results. E. G. Klarmann and E. S. Wright (143) published formulas for synthetic and semi-synthetic media aiming at the elimination of one variable in this picture, viz., that of the composition of peptone. The culturing of *Staph. aureus* for test purposes on semi-synthetic nutrient media is the subject of a paper by P. A. Wolf (144) whose aim corresponds to that of the authors of the preceding reference.

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(Turn to Page 147)

Rotenone Situation

Acute scarcity in U. S. looked for when heavy consuming season arrives . . . large stocks reported in South America . . . importers and processors ask end of public purchase.

A SERIOUS shortage of rotenone in the United States threatens to lead to heavy crop losses during the coming season, according to the view of most importers and processors of rotenone bearing roots. Stocks in this country are reported to be at a low level, and though some market observers report that there are 2,000 tons of root in Peru, awaiting shipment, there seems to be only a remote prospect that any substantial quantity will arrive here in time to help relieve the shortage during the 1946 season.

Several meetings of rotenone processors and importers have been held over the past few weeks, the most recent in Washington, March 12th, attended by members of the newly created Rotenone Advisory Committee of the Civilian Production Administration which replaced the WPB Rotenone Advisory Committee, disbanded when WPB terminated its operations. At the Washington meeting, and at a previous meeting in New York, the most important question considered was whether or not public purchase of rotenone should be continued. Under the legislation setting up the public purchase program, a termination date of March 31, 1946 had been set, but the fear is expressed in some quarters that CPA will seek to extend the public purchase program on rotenone roots, perhaps indefinitely.

At the March 12th meeting, the advisory committee was reported prepared to recommend that public purchase be terminated. Members of the committee include the following: R. B. Stoddard of Dodge & Olcott, Inc., Harold Noble of S. B. Penick & Co., William Haude of John Powell & Co., R. J. Prentiss of R. J. Prentiss & Co., D. B. Faloon of Hammond Paint & Chemical Co., R. B. Joyce of Derris, Inc., Joseph Batty of GLF, Douglas Allen of Otis-Astoria Co. and Harold Poel of H. A. Astlett & Co.

Attention was focussed on the serious rotenone supply situation in a market letter issued by Dodge & Olcott, Inc., New York, early in February, in which responsibility was placed at the door of the Civilian Production Administration. Had the CPA terminated public purchase in November, said the D & O letter, as the trade apparently expected it to be, "no emergency would have arisen." Importers and processors would have been enabled to make their own arrangements for the importation of rotenone roots and the present acute scarcity need not have developed.

Instead of terminating public purchase, however, CPA replaced the allocation set-up with a plan of distribution which the D & O letter charges resulted in diverting a large portion of the available root away from the "most immediate and most urgent uses" toward other less important uses. "Far more serious," says the D & O letter, "was the fact that, as has frequently occurred under public purchase, very large quantities of rotenone root accumulated at Iquitos, Peru, and are still at that point. With private industry powerless to act, it is doubtful if sufficient portion of this root can now reach the country in time for the very heavy May and early June requirements in critical areas. Briefly, we are faced by a situation under which heavy past arrivals have been partially dissipated, and first quarter arrivals will be far too light at a time when critical and serious supply deficiencies exist in the heaviest consuming areas."

It has been impossible to obtain from the CPA, in time for publication here, any official statement dealing with the rotenone supply situation. Figures on rotenone imports, recently made available, are rather revealing, however. They show that imports into the U. S. during 1945 totaled 8,820,000 lbs. This compares with 7,998,000 lbs. in 1941, 3,799,000 lbs. in 1942, 3,570,000 lbs. in 1943 and 6,327,000 lbs. in 1944. With 1945 arrivals being in excess of figures for 1941, a year in which substantial amounts of rotenone were still coming in from the Far East, it may be surmised that the CPA feel that the government agencies have made a good record in finding new sources to replace the producing areas taken from us for a time by the Japanese.

The explanation has also been advanced by followers of the rotenone market that the CPA is very anxious to avoid, in the case of rotenone, a repetition of the confused market situation which followed removal of import and price controls on other imported materials such as carnauba wax. Perhaps it is their plan to retain government purchase until supplies of rotenone are freely available in producing areas, and all interested importers have been able to make arrangements for their fair share of available stocks.

Importers and processors, on the other hand, seem to have decided that government controls have already been continued too long, and they are prepared to take their chances again in a free market. There is always the possibility, of course, that should public purchase be discontinued as they ask, they would be equally unhappy about the situation a few months from now.

3 Points about DDT for insect control

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DEENOL 50-F	DEENOL 25-EM	DEENOL 5-H	DEENOL 25-C	DEENOL 10-A
Wettable powder; mix with water, use as spray. DDT—50%	Emulsifiable oil; dilute with water, use as spray. DDT—25%.	Ready-to-use oil spray. DDT—5%.	Concentrated oil; dilute with a solvent, use as spray. DDT—25%.	Ready-to-use dusting powder. DDT—10%.
For use on surfaces where *wetting* by water and *visible residue* are not objectionable.	For use on surfaces where *wetting* by water is not objectionable and *visible residue* is not desired.	For use on surfaces where *wetting* by water *is* objectionable and *visible residue is* not desired.	Designed for large users who may wish to prepare their own spray mixtures by adding solvents.	Use on floors and baseboards, in cracks and crevices of woodwork, dark places behind pipes and other places insects infest.
Effective against: Flies, ants, gnats, mosquitoes, fleas, ticks, wasps, cockroaches, carpet beetles, moths, silverfish, bedbugs, weevils, cadelle, and other stored product insects.				Designed especially for crawling insects such as cockroaches, ants, bedbugs, ticks, silverfish, lice.

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CAUSTIC POTASH

(*From Page 43*)

liquid. Iron of course to the soaper has always been the root of many troubles. However, this form of liquor today is packed for shipment with less than five parts per million of iron. It may be lowered, but caustic potash is generally shipped in iron containers so that under most conditions arrives at the soapers plant containing from 5 to 10 parts per million. Time and again the question is raised as to why *all* the iron is not removed or why the material is not shipped in special containers other than iron or in special surface-treated containers. This can be done but to little purpose inasmuch as after arriving at the soap plant it is handled through iron pipe-lines and pumps and invariably boiled with the fat and other ingredients in an iron kettle, which probably have equal or greater quantiteis of iron, making us wonder if some iron complaints are unnecessary,—always keeping in mind that the quantity of iron we are talking about is 5 parts per million or less. It is also well to remember that the determination of this small amount of iron requires one of the finest colorimetric tests in the laboratory.

The impurities in the solid forms of caustic potash which are made from the same liquor, are, of course, somewhat higher in the case of the chloride and carbonate, corresponding to the increase in strength. The chloride content is about double that in the liquor or approximately 1.5%. The carbonate tests about 1.0% which is considerably higher than the liquor due to the affinity of this material for CO_2. Neither one however is of concern in such concentrations to the soap industry. The iron content of the solid form is much higher than in the liquor due to the fact that this element, potassium, is more reactive chemically than other alkalies such as soda, for instance, and the corrosive attack on steel greater with the resultant iron increase running about 100 parts per million. All other impurities such as sulfates, silica, lime and magnesia are extremely small and cause little or no trouble.

If better caustic potash is required for the soap industry, the manufacturer stands ready to produce it. As a matter of fact, we have developed a much purer caustic potash both in liquid and solid form, known as low chloride caustic potash. This was developed in our "tailor made" program to meet the exacting requirements of other industries. Its main difference is the very low chloride content testing approximately .019% as Cl in the solid form as against appromixately .75% as Cl in the regular material and approximately .01% as Cl in the liquor as aaginst .35% as Cl in the regular material. This grade of potash because of special processing sells at a higher price than the regular material but warrants its higher cost from the quality standpoint for those industries where salt is a factor. Whether this product or even a purer product would make a better soap is the soaper's problem but it is available when the requirement makes it necessary.

STAIN REMOVERS

(*From Page 35*)

more effective products Typical is a spotting pencil made from:(6)

	Parts
Soft soap	25.0
Methyl hexalin	5.0
Benzine	5.0
Finely powdered hard soap	65.0

Combine the soft soap and solvent sand mix with the powdered soap to form a stiff paste. Press into suitable molds and pack in tin foil or cellophane.

The potentialities of simple soap solutions as stain removers should not be overlooked. Bennett,(6) for example, mentions that a 2 per cent soap solution is useful as a general spot remover and one often effective for eradicating egg, blood, candy and general dirt spots. To use such a simple solution, the stained area is first moistened with water and a folded cloth placed underneath. A clean cloth is dipped in the soap solution and gently rubbed on the spot until a lather forms. The suds are removed by rubbing with a wet cloth. If necessary, the operation may be repeated.

Soap-and-water spotting solutions are frequently used in commercial practice. According to one authoritative source,(18) the proper use of suitably prepared solutions is safe for all ordinary fast colors, or, practically, for colors not affected by water. To make such spotting solutions, about 2½ pounds of liquid or paste (coconut oil) soap is dissolved in 5 gallons of water. Addition of ordinary ether, glycerine and alcohol to such solutions is also a recommended procedure. Such a spotting solution is made by first mixing thoroughly one pint (or slightly more) of ether, one-half gallon of alcohol and one pint (or slightly more) of glycerine. To this mixture is then added sufficient soap solution to make five gallons. Obviously, such a solution could be adapted for general use.

CERTAIN types of stains, especially oils and greases, respond to the purely physical action of absorbent materials. When spread on stained fabrics, such substances as chalk, magnesium carbonate, fuller's earth, and cornmeal may absorb the staining material and then can be brushed off. Absorbents are often quite effective if the stain is light or fresh, but they cannot be relied upon if it is set or dry or very extensive. Their chief advantage is the fact that they are safe to use on all fabrics. Although absorbents are generally used in powdered form, one product on the market consists of a lightly compressed material. Perhaps more convenient, it crumbles to a powder when applied and hence works in the same way as other products of this class.

When using absorbent powders, the usual procedure is to lay the stained fabric upon a flat surface and spread a layer of the absorbent over the stain; working the powder around gently so as not to pull the fibers. As soon as the powder becomes gummy, it is shaken or brushed off; the process being repeated until the bulk of the strain is removed. Finally, a layer of the absorbent is applied to the stained area and allowed to remain over-night or longer if necessary to remove the last traces of the stain.

To obtain a combined and faster action, solvents are often added to the absorbent material. For ex-

ample, magnesium carbonate mixed to a paste with benzene is quite useful for removing older stains that have set or hardened. The paste is rubbed on the spot, allowed to dry and is then brushed off. With this combination, the benzene serves to dissolve the oil or grease which is absorbed by the carbonate. This and similar absorbent-solvent pastes are especially useful for cleaning light-colored, unwashable materials, such as laces or the like and for treating stains on heavier garments, like overcoats. It is said (9) that the spreading of the solvent and the formation of a ring can be avoided to a considerable extent by using such products.

Modifications of this simple idea have been presented in patented methods.(19) Further elaborations are also available in standard reference sources. For example, a preparation which combines a triple detergent, solvent and absorbent action against a large variety of stains may be made from:(6)

Unfilled soft soap.....	25.0%
Triethanolamine oleate.	5.0%
Water	30.0%
Alcohol	20.0%
Acetone	10.0%
Talcum	10.0%

A product of this type must be shaken well before use in order to disperse the absorbent talcum thoroughly. It is applied to the stained part, allowed to dry and then is removed by brushing. Of course, various modifications of such a product are very easily formulated.

In this indicative rather than comprehensive review an attempt has been made to show that quite a varied number of products can be marketed to augment those already available for general use. The alert manufacturer will find it well worth his while to expriment further and to look into the potentialities of newer solvents and other stain removing aids now being made available through chemical research.

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Fungicidal Preparations

Tetraethyl thiuram may be dissolved in water with the aid of sodium dibenzyl sulfanilate. These solutions are converted to emulsions on dilution with water. The emulsions are stable and suitable for use against fungus growth and in insecticidal preparations. E. Kay and Imperial Chemical Industries Ltd. British Patent No. 562,009.

Waxlike Agent

Lithium stearate is heat-treated either alone or in the presence of waxes or solvents at a temperature above 150°C. and below the decomposition point, until fusion and substantial lowering of the viscosity occur. W. F. Luckenbach, Jr., to Foote Mineral Co. U. S. Patent No. 2,388,166.

TECHNICAL Briefs

From Current Literature in the Sanitary Products Field

Mixed Insecticide

An insecticide contains an alkyl ester of an unsaturated dicarboxylic acid such as di(2-ethyl hexyl) fumarate, and an extractive of a plant selected from the group consisting of derris, cube and pyrethrum. Wm. Moore, to Am. Cyanamid Company. Canadian Patent No. 429,521.

Impregnation with DDT

Studies were made to determine whether impregnation of fabric sacks with DDT would prevent insect infestation. Returnable sacks of twill used for flour and grain, and nonreturnable sacks used for cattle food, were tested. The results showed a considerable measure of control, depending on the type of insect. Some are killed on short exposure, some only on long exposure. H. Hayhurst. *J. Soc. Chem. Ind.* 56. 296 (1945).

Fungicide Wax Problems

Much material for tropical use has been processed with a fungicidal microcrystalline wax. Fungus growth closely parallels the fungicide concentration. High temperatures rapidly deplete the fungicide concentration in microcrystalline waxes. At 105°C. and 125°C. mercurial fungicides afford best protection in the following order: phenyl mercuric stearate, phenyl mercuric salicylate, pyridyl mercuric stearate. The minimum amount of fungicide in waxes necessary to provide protection against fungus growth is as follows: pyridyl mercuric stearate, about 0.35 per cent; phenyl mercuric salicylate, about 0.10 per cent; and phenyl mercuric stearate, about 0.08 per cent. W. F. Horner, F. R. Koppa, and H. W. Gerbst. *Ind. Eng. Chem.* 37, 1069-73 (1945).

Composition of DDT

Studies have been made of the composition of several samples of technical DDT and a sample of "by-product oil" recovered from a refining process of crude DDT. Technical DDT has been found to contain upwards of 70 per cent of 1-trichloro-2,2-bis-(*para*-chlorophenyl) ethane, which may be termed *p,p'*-DDT; this is the most active insecticidal ingredient. The major impurity is 1-trichloro-2-*ortho*-chlorophenyl-2-*p*-chlorophenyl ethane, called *o,p'*-DDT.

Lesser amounts of 12 other impurities have been found, the presence of which may be explained on the basis of side reactions involving chloral, chlorobenzene, sulfuric acid, and impurities in the starting materials. H.L. Haller et al. *J. Am. Chem. Soc.* 67, 1591-1602 (1945).

Purification of Waxes

Animal and vegetable waxes may be purified in aqueous emulsions by addition of an oxygen-containing acid of chlorine, and heating. Melt and filter the wax through activated diatomaceous earth. Add chloric acid in small quantities and stir vigorously to form an emulsion. Heat to above the melting point but below the boiling point of the wax and stir for several hours to remove impurities and cause the wax to become more transparent, less tacky, lighter in color, and less odorous. Break the emulsion with insoluble salt formation by addition of sulfuric acid and a water-soluble salt of an alkaline earth metal. While calcium chloride may be added for salt formation, it is necessary to add hydrochloric acid before the addition of calcium chloride to avoid a temperature increase. The emulsion may also be broken by addition of excess sulfuric acid and cooling without stirring. The mixture separates into 2 or 3 layers and the wax is removed by decantation or by cooling and then as a solid. C. S. Treacy, to Mamaroneck Chemical Corp. U. S. Patent No. 2,383,629.

Effect of DDT on Honeybees

DDT acts as a contact and a stomach poison on honeybees. The lethal dose 50 or LD 50 determined by an individual feeding method was 4.6 gamma per bee. Bees do not always die when they come in contact with DDT in the hive. Pollen paste containing a large proportion of DDT was nontoxic when fed to bees; DDT in this form is perhaps less injurious than the arsenicals. In queen-bee candy small amounts of DDT were toxic. The difference in action between the pollen and candy-DDT mixtures is not explained. Under regulated use, DDT might prove less destructive to bees than the present unregulated use of arsenicals. J. E. Eckert. *J. Econ. Entomol.* 38, 369-74 (1945).

Rot Resistance of Fabrics

A simple apparatus is described for subjecting fabric treated with mildew preventives to water leaching under controlled conditions. Steam sterilization of fabric containing certain organic preservatives decreased the mildew resistance of the fabric as indicated by subsequent culture tests. The choice of the best test or combination of tests to determine mildew resistance of a fabric depends on the service conditions under which the fabric is to be used. Data are presented on the fabric-preservative properties of a number of fungicidal compounds. A new material of commercial origin, 2,2'-dihydroxy - 5,5' - dichloro - diphenylmethane, has unusual fungicidal properties and offers promise as a fabric

preservative. Copper naphthenate has been more effective per unit weight on fabric than have several other copper compounds. P. B. Marsh, G. A. Greathouse, M. L. Butler, and K. Bollenbacher. U. S. Dept. Agr., Tech. Bull. 892, 22 pp. (1945).

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Relative Toxicity of TDE and DDT

Compounds related to DDT, including those present in the technical product, have been tested for their toxicity to fourth instars of *Anopheles quadrimaculatus* Say. One of these compounds, 1,1-dichloro-2,2-bis (parachlorophenyl) ethane, called TDE from the generic name "tetrachloro diphenyl ethane", has been found to have a toxicity equal to, and in some forms of application greater than that of DDT. Tests have been made to compare the toxicity of DDT and TDE when applied in acetone suspensions, dusts, and oil solutions.

In acetone suspensions TDE is indicated to be better than DDT in its residual toxicity. In a comparison at 0.01 ppm. the average length of time required for complete knock-down of larvae was 0.81 hour for DDT and 1.166 hours for TDE. When impregnated on talc and applied as a dust, TDE had a toxicity to *Anopheles quadrimaculatus* equal to, or greater than that of DDT. In other tests TDE has shown some indication of being superior against culicine larvae. In fuel-oil solutions TDE appears to be definitely more toxic to anopheline larvae than DDT. C. C. Deonier and H. A. Jones. *Science* 103, No. 2662, 13-14 (1946).

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DDT Pyrethrum Combinations

DDT and pyrethrum aerosols were equally toxic to adult anopheline mosquitoes. DDT aerosol was much more toxic to adult houseflies, but it was poorer in knockdown action against both insects. Incorporation of the two insecticides in an aerosol provides desirable toxicity and knockdown action. Addition of petroleum motor oil permits reduction in the concentration of DDT and cyclohexanone in the aerosol. A. W. Lindquist, B. V. Travis, A. H. Madden, H. O. Schroeder, and H. A. Jones. *J. Econ. Entomol.* 38, 255-7 (1945).

Mildewproofing Compounds

The most important approved mildewproofing compounds are as follows by chemical classifications.

1. Phenol Derivatives: Orthophenyl phenol, 2-chlorophenyl phenol, pentachlorocresol, tetrabromocresol, salicyl anilide, and 2,2′-dihydroxy-5,5-dichlorodiphenyl methane (Preventol GD).

2. Naphthenic Acid Derivatives: Copper and zinc naphthenates.

3. Zinc Organic Compounds: Zinc dimethyl dithiocarbonate.

4. Copper Organic Compounds: Copper oleate.

5. Cuprammonium Compounds: Cuprammonium hydroxide, cuprammonium fluoride, and cuprammonium carbonate (Copapel A).

6. Mercury Compounds: Phenyl mercury acetate (Puratized PC No. 1), phenyl mercury oleate, and phenyl mercury trinitrilo-ethanolamine lactate (Puratized N5-D, N5-X, 9-phenyl mercuro-10-acetoxy-octadecanoic acid (Puratized LN), and Puratized B-2 Solid.

7. Quaternary Amines: Alkyl dimethyl benzyl ammonium salts (Zephiran), cetyl pyridinium chloride, and alkyl quaternary ammonium pentachlorophenate.

8. Organic Amines: Aminoguaiacol benzothiazole iminourea.

Some of these are water-soluble, some alkali-soluble, and some solvent-soluble. They can also be classified as to permanence.

A. Permanent: Typical of this group are the copper salts such as copper naphthenate, and cuprammonium salts.

B. Semipermanent: This includes the majority of current mildewproofing agents. Examples are Preventol GD and the Puratized products.

C. Nonpermanent: Temporary types are used for preservation of fabric during storage or shipping as well as during manufacturing processes in the mills. Examples are Zephiran and Preventol I Liquid.

Noncellulosic materials such as Vinyon and nylon are mildew resistant. Modified cellulosic types such as acetate have some resistance but should be given protection. Wool is subject to attack. H. C. Borghetty. *Rayon Textile Mo.* 26 No. 9, 141-3 (1945).

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DDT on Water Surfaces

Tests against the larvae of Psorophora mosquitoes in Florida show that petroleum fuel oil or xylene emulsions containing DDT give complete control at 0.1-0.2 pound of DDT per acre of water surface when applied before the eggs hatch. A self-releasing applicator, dispensing 1.8 and 0.1 pounds of DDT per acre gave complete control before the second flooding. DDT dust was not satisfactory. Dust, sprays, oil-impregnated sawdust or poured oil, applied at the rate of less than 0.1 pound of DDT per acre, controlled the larvae after hatching. C. B. Wisecup and C. C. Deonier. *J. Econ. Entomol.* 38, 250-2 (1945).

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Copper-resistant Fungi

Qualitative observations on the growth on cotton fabric containing copper naphthenate indicate that *Chaetomium globosum* and *Metarrhizium* are completely inhibited by 0.3 and 0.5 per cent of copper as the naphthenate, respectively, whereas growth of *Aspergillus niger* is not inhibited over the range of 0.005-0.8 per cent of copper.

A potent cellulose-destroying species of *Penicillium* isolated from soil has been shown to grow readily on samples of cotton fabric containing 0.3 per cent of copper. The activity of this organism and also that of *A. niger* is inhibited by the presence of 0.3 per cent of copper as copper naphthenate plus 0.1 per cent of mercury as mercuric naphthenate. C. H. Bayley and M. W. Weatherburn. *Am. Dyestuff Reporter* 34, 247-8 (1945).

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Control of German Cockroach

Boric acid is an effective nonrepellent stomach poison for the German cockroach. Baits consisting of 10 per cent boric acid and 90 per cent confectioners' sugar, or 90 per cent of an equivolume mixture of butter and honey, though slow in action, give excellent control at low cost with comparative safety to the user. O. S. Bare. *J. Econ. Entomol.* 38, 407 (1945).

TRADE NEWS . . .

Opens Sanitary Supply Department

Mudge Paper Co., Baltimore, recently announced the opening of a sanitary supply department. Louis P. Funk is the manager of the department for the company which maintains warehouses in Baltimore, Washington, Philadelphia and York, Pa.

New Wax Products Building

Wax Products, Ltd., a subsidiary of Dustbane Products, Ltd., Ottawa, Ontario, are building a $50,000 steel, concrete fireproof building on the Canadian Pacific Railroad, east of Hurdman's Bridge, it was learned recently. The manufacture of emulsified water waxes and paste wax will be under way by about May 1, according to reports. C. E. Pickering is the head of both concerns.

Eradico Products Moves

Eradico Products Co., Detroit pest control operators and manufacturers of household insecticides, recently announced that they had moved to a new factory at 684 E. Congress St., Detroit 26.

New N.A.I.D.M. Active Members

The National Association of Insecticide and Disinfectant Manufacturers has announced that the following firms were recently elected to active membership: Airosol, Inc., Neodesha, Kan.; Ajax Products, Inc., Chicago; and W. T. Rawleigh Co., Freeport, Ill.

Hollingshead Names Olson V. P.

The following officers have been elected recently by R. M. Hollingshead Corp., Camden, N. J.: L. M. Olson as vice-president in charge of the "Whiz" automotive division; T. J. Bagley as executive vice-president of the company, and C. R. Ferriss as treasurer, in addition to retaining his duties as assistant treasurer. Mr. Olson has been with the company since 1925, when he went with Hollingshead as office manager of the St. Paul division. Later he became credit manager of that division and was advanced successively to assistant branch manager,

L. M. OLSON

branch manager and Midwest division manager. In 1939, he was transferred to the company's headquarters at Camden and assumed complete direction of sales of the "Whiz" automotive division.

National Can Elects Wiggin V.P.

Election of Charles B. Wiggin as vice-president and general manager of National Can Corp., was announced recently by the corporation. Mr. Wiggin is also a director and treasurer of National Can and will continue in these capacities.

McCormick Men Honored

Bernard Weiser, sales research executive of McCormick & Co., Baltimore, has been elected to the company's senior board of directors, the firm announced recently. He became associated with the company in 1942 as a consultant on priorities and wartime problems, and joined McCormick on a full-time basis in his present capacity, in charge of market surveys and sales planning, in Sept., 1944. He has also served as a member of the McCormick junior board of directors, of which he served as chairman for three consecutive terms. He is a graduate of Syracuse University.

Another McCormick man honored recently is J. Grayson Luttrell, vice-president, who was elected vice-president of the Tea Association of the U.S.A. at a recent meeting of the association in New York.

Two Join Hubman Supply Co.

Hubman Supply Co., manufacturing chemists, Columbus, O., has announced the return to his former post of Robert W. Luft, who was recently discharged from the Army, where he served with the Air Corps for four years. He had been purchasing agent of Hubman for five years before going into service.

At the same time the company announced that Col. E. L. Nelson, who served at headquarters of the Fifth Service Command, Fort Hayes, for three years, and on the staff of Gen. Omar N. Bradley during the European campaign, has become affiliated with Hubman. Previously he had been connected with Weirton (W. Va.) Printing & Publishing Co., The News Publishing Co., Wheeling W. Va., and Belle Alkali Co., Charleston, W. Va.

Dr. Dreyfuss of West Dies

Dr. William Dreyfuss, 76, chemical director of West Disinfecting Co., Long Island City, N. Y., died at his home in New York, March 13. Widely known as dean of the scientific men in the disinfectant and sanitary products field, he was with West for 48 years. Dr. Dreyfuss would have been 77 years old in June, and had returned from a trip to Switzerland and Europe, late in February. A native of Switzerland, he was educated there and in England. Dr. Dreyfuss never married.

Carnes Opens Sales Agency

A. H. Carnes recently announced the opening of an office at 75 E. Wacker Drive, Chicago, where he will act as a manufacturer's representative for Stanco Distributors' line of white oils and petrolatums in Wisconsin, Indiana and Iowa. He will also represent manufacturers of solvents, waxes and insecticide concentrates. For about 20 years he was division sales manager for Stanco.

Rutgers PCO Course Mar. 25-28

Rutgers University, New Brunswick, N. J., in cooperation with the New Jersey Pest Control Association, will sponsor a short course in rodent and termite control Mar. 25-28. The studies will not be confined to classroom work but will include actual servicing of rat jobs. Instructors for the course will be Ernest M. Mills, U. S. Fish and Wildlife Service, on rodent control; Dr. John B. Schmitt, Department of Entomology, Rutgers University, on insect and mite parasites on rodents and their relation to the welfare of man; Dr. Leslie Stauber, assistant professor of Zoology, Rutgers University, on internal parasites of rodents associated with human diseases, and Dr. T. E. Snyder, Senior Entomologist, Forest Insect Investigations, Bureau of Entomology and Plant Quarantine.

Carmen Joins Enterprise Paper

George Carmen, who has been associated with the Sanitary Products and Paper Co. division of Crown Zellerback Corp., New York, as a sales representative for the past 16 years, recently joined Enterprise Paper Corp., New York, as vice-president. Enterprise are the distributors for A. P. W. Products of Albany, N. Y., paper towels, toilet tissues and toilet seat covers.

New Central Chemical Warehouse

Central Chemical Co., Dallas, Texas, manufacturers and distributors of sanitary and janitor supplies in the Southwest, are building a new warehouse and showroom which are expected to be completed in the near future. The company is located at 608 Commerce St., Dallas 2. Mike Goldberg is president of the firm.

Pennsalt Issues DDT Booklet

Pennsylvania Salt Manufacturing Co., Philadelphia, is distributing a new four-page, three-color folder on its line of DDT products. The booklet lists five "Penco" products and briefly outlines their uses.

The company also announced recently that Edward M. Wilson had been released from the Army after serving four years as a captain in Chemical Warfare Service, and had returned to the company as Philadelphia district sales manager of the heavy chemicals division.

Four ex-servicemen join the staff of Magnus, Mabee & Reynard, Inc., New York. Left to right: Roy E. Webb, chemist, former 2nd Lieutenant, Army Air Force; Charles B. Taxier, sales representative, former sergeant; Stanley A. Olds, sales representative, former 1st Lieutenant; F. Kenneth Stephenson, Jr., asst. manager of order department, former captain, AAF.

Farm Co-op Buys Spray Equipment

Farmers Union Cooperative Oil Co., Concordia, Kans., has purchased a pressure spray outfit, in which a DDT spray compound will be utilized to control flies on cattle herds and in barns of this co-op's members. Expense of the operation will be allocated on a cooperative, share-the-cost plan.

George F. Leonard, below, vice-president of Tobacco By-Products and Chemical Corp. of Louisville, Ky., was announced recently as the new president of the Agricutural Insecticide and Fungicide Association, New York, following a meeting of the group's board of directors. He succeeds Joseph B. Cary, president of Niagara and Chemical Co., Middleport, N. Y., who retired because of pressure of other business, after serving as president of the association for four years.

Market DDT Coated Wallpaper

Trimz Co., Inc., Chicago subsidiary of United Wallpaper, Inc., has announced a new wallpaper, coated with DDT, which, it is claimed, will kill moths and other insects. The product, which is to go on sale about April 1, is packaged in rolls 48 ft. long and 15 inches wide, which makes it easy to hang in closets.

New Baird & McGuire Price List

Baird & McGuire, Inc., Holbrook, Mass., are currently mailing their latest price list, effective Feb. 1. The new listing shows several new products and formulas. All prices now include the 55-gallon drum charge, with no further additions. Packaging charges remain unchanged.

Owens-Illinois Film is Available

A new sound, color film, "Now for Tomorrow," was presented at a recent press reception in New York by Owens-Illinois Glass Co., Toledo. Harlan Hobbs, director of the company's film division also spoke on the use of industrial films. The new Owens-Illinois film, which is available for showings by manufacturers at sales meetings and conventions, is devoted to the profession of pharmacy. Also speaking at the reception was Leo McGivran, of the Owens-Illinois sales promotion department.

NSSA Reaches 400 Mark

National Sanitary Supply Association, Chicago, has recently reached the 400 mark in membrship. Sixteen new names were added to the roll between Feb. 1 and 15.

The Tenth Annual Pest Control Operators' Conference held at Purdue University, Lafayette, Ind. Jan. 27-Feb. 1, broke all attendance records. There were 260 persons registered, representing 27 states and Canada. The conference was held under the general direction of Prof. J. J. Davis of Purdue and William O. Buettner, secretary of the National Pest Control Association.

Employees Buy Moulder-Oldham

Moulder-Oldham Co., janitor supplies, Oklahoma City, has been purchased by its employees and is now known as Miller-Norris Co., it was announced recently. Since Dec. 31, 1940 the employees of the company were under contract to purchase the firm, and the contract was successfully completed on Dec. 31, 1945. At that time, the entire assets, including building and grounds, passed to the new partnership composed of C. W. Miller, H. H. Norris, E. F. Robinson, C. W. Shipmam and D. E. Oldham.

Making New DDT Insecticide

Manufacture of "DeaDinsecT," a six per cent DDT insecticide was started recently by Sloss-Sheffield Steel & Iron Co., Birmingham, Ala. The product will be distributed through grocery, drug and hardware stores, according to an announcement by the vice-president in charge of sales of the company, and will be widely advertised. Sloss-Sheffield, organized in 1889, was concerned solely with the manufacture of pig iron and coke until 1920, when a by-product plant was established. The company uses light oils, coke by-products, and compounds them with DDT to make the insecticide. "DeaDinsecT" is manufactured at Sloss-Sheffield's by-product plant in North Birmingham.

Wants Carpet Cleaning Machine

One of our readers is interested in locating a source of supply for a carpet cleaning machine of the foam type which is adapted for use for cleaning carpets on the floor.

Fassig Joins Hercules

Walter W. Fassig, who was discharged from the Army in January as a major, has joined the Naval Stores department of Hercules Powder Co., as entomologist in charge of the biological laboratory at the department's Brunswick, Ga., plant, the company announced Mar. 1. He will work under the direction of the chief chemist of the plant. After receiving his B. S. and M.Sc. degrees from Ohio State University, Mr. Fassig became a member of the department of entomology of the University of Delaware in Mar., 1937. He remained there until Oct., 1941, when he entered the Army. While in the Army he worked on special assignments for the sanitation corps. An overseas tour of duty included specimen work on mosquito control in New Guinea, Manila and Korea.

Chemical Publishing Catalog

A new catalog of technical books has just been issued by Chemical Publishing Co., 26 Court St., Brooklyn 2. This catalog contains a listing of the latest books published by the company on chemistry, physics, science, technology, medicine, foods, formularies, drugs, cosmetics, engineering, metals, technical dictionaries, etc. Copies are available.

Two Sergeant Men Rejoin Firm

Edgar Sergeant, Jr., recently released from the U. S. Army and Lt. Wm. C. Boyle, recently of the Navy, have rejoined the staff of E. M. Sergeant Pulp & Chemical Co., New York, the company has just announced.

INSECTICIDE ACT REVAMPED

The new proposed federal Insecticide Law has been revised, expanded and rewritten and reintroduced into the House of Representatives by Rep. John W. Flanagan, (D-Va.) Chairman of the House Committee on Agriculture. The bill now has a new number, H.R. 5645 (formerly H.R. 4851) and in addition to regulating insecticides, fungicides, rodenticides, now includes herbicides. The rewritten version of the bill changes phraseology but does not alter the substance of the original bill including required product registration with the U. S. Department of Agriculture. Requests for further hearings on the revised version of the Insecticide Act have been made by industry.

Plan Sanitary Supply Exhibits

National Sanitary Supply Association will hold its annual convention on May 26 through 29th at the Morrison Hotel, Chicago, at which will be featured what is planned to be the largest exhibit and merchandise display of janitor supplies and sanitation equipment ever held. Plans call for a four-day meeting. Further details regarding meetings and exhibits may be obtained from Leo J. Kelly, executive secretary 139 N. Clark St. Chicago 2.

APHA Meets Nov. in Cleveland

American Public Health Association will hold its 74th annual meeting in Cleveland, Ohio, during the week of November 11th, 1946. This will be the first full meeting of the Association since 1942. Exhibits will feature the 1946 meeting. Floor plans have been prepared for prospective exhibitors and are obtainable from the office of the Association at 1790 Broadway, New York 19.

Two Join Skinner & Sherman

Daniel L. Guilfoyle has rejoined Skinner & Sherman, Inc., Boston consulting chemists, after four years in the army, the company announced recently. Another veteran, Marshall Levin, has joined the staff of the bacteriological department, it was announced at the same time. Mr. Levin recently returned from Guam, where as a member of Naval Medical Research Unit No. 2, he was engaged in the investigation of the chemistry of steroids relative to tropical diseases.

Issues Pest Control Data

The National Research Council, 2101 Constitution Ave., Washington 25, D. C., recently announced the availability of abstract bulletins that will be circulated bi-weekly and which will cover theoretical and practical information on war time developments of methods of insect and rodent control. Because the nature of the information prevented its release during the war, little opportunity has existed for the publication or dissemination of the data obtained by such agencies as the Office of Scientific Research, the Bureau of Entomology and Plant Quarantine of the U. S. Dept. of Agriculture, the Fish and Wildlife Service of the U. S. Dept. of the Interior, the U. S. Public Health Service, the Army and Navy, the Food and Drug Administration, the Tennessee Valley Authority etc.

Nu-Way Products New Plant

J. C. Sullivan, president of the Nu-Way Products Co., Little Rock, Ark., will expend $50,000 additional on the old Livestock Show Grounds in North Little Rock, Ark., which the company purchased from that city several months ago. The program will double the firm's payroll bringing the employes to 50. Of the amount $20,000 is to be spent on new equipment, the remainder on new structures and building improvements. The arena at the showgrounds burned leaving the long exhibit building, the office building and a long warehouse standing. These structures were acquired in the 4½ acres purchased by the company. At the same time Mr. Sullivan announced the firm's sales territory will be extended to Louisiana and east of the Mississippi River. A similar plant is operated in Oklahoma.

Carnauba Substitute Reported

Wax from the cauassu plant found in the Amazon River jungles of Brazil may have possibilities as a substitute for carnauba wax, according to Nelson Knaggs of the Hilton-Davis Chemical Co., Cincinnati, now a division of Sterling Drug, Inc. Speaking before the Carbon and Ink Ribbon Association on Feb. 14 in New York, Mr. Knaggs stated that the cauassu tree takes only one year to produce wax compared to ten for the carnauba and that it might have plantation possibilities. Mr. Knaggs also showed a motion picture of his quest for carnauba substitutes and told of a new exhibit on the world's waxes assembled by Hilton-Davis.

Insects on Mutual Radio

"Pests—the Battle that Never Ends" was the title of a radio program on Feb. 17 over the Mutual Broadcasting System, originating at Station WOR, New York, 9:00 to 9:30 P.M., E.S.T. The broadcast was part of a regular weekly science program under the title, "Exploring the Unknown," sponsored by Revere Copper & Brass, Inc., New York. St. George & Keyes, New York advertising agency handled the broadcast.

Of the new family of household specialty products (below) to be marketed by American Oil Co., Baltimore, five products are now available. These are: two "Amoco" insect sprays containing one and five percentages of DDT, a French dry cleaner, home oil and "Amoco Door-Ease"—a stick lubricant for squeaky doors. Other products will be ready when cans are available for packaging.

Eastern PCO Conference

The 6th annual Eastern PCO Conference was held at Massachusetts State College, Amherst, February 4-6. Registrants totalled 178, the largest attendance to date. The program, which emphasized new insecticides and rodenticides, attracted numerous health officials in addition to PCO's from the East, Midwest, and Canada.

Early sessions were devoted to "bringing Pest Control up-to-date." The chemistry, solvents, formulations, and application of DDT, DDD, "666", and other of the newer substances, were discussed. A highly original and effective demonstration of "application and equipment" was presented by Phil H. Mayer, Jr. In the evening, demonstrations of fumigation safety measures, using test animals, were conducted.

Feb. 5 sessions were devoted to the "bug of the year" the stored food pests group. Laboratory work included identification of species and damage. Permanent mounts, prepared under the direction of curator Dr. Marion E. Smith, were presented to the 75 earliest registrants. Dr. Richard T. Cotton discussed methods of control of stored food pests. The contamination problem was explored by Boston representatives of the U. S. Food and Drug Administration.

B. W. Elldredge, a past president of NPCA served as toastmaster at the banquet, at which Dr. C. R. Twinn, of Ottawa, Canada, was the guest speaker. Dr. Twinn discussed the early history of entomology. The final day was concerned with developments in the rodent control field. Mr. Justus C. Ward of the Wildlife Research Laboratory, Denver, led discussions of compound 1080, ANTU, and the new German poisons. Comprehensive tests of these materials, as feeding and tracking poisons, were conducted by Walter Dykstra. The rodent program was under the direction of George B. Lay, U. S. Fish and Wildlife Service.

Survey German Wax Facilities

Dr. J. Vernon Steinle, research and development director for S. C. Johnson & Son, Inc., Racine, Wis., recently returned from a trip to Europe for the government. He spent a month in Germany inspecting industrial and chemical plants to determine the progress made by the Germans in the production of natural and synthetic waxes during the war. Dr. Steinle made the trip as an agent of the Technical Industrial Intelligence Board, a bureau of the Department of Commerce, set up to obtain and make available the technical knowledge of German wartime research to American industry. In addition to interviews with German and Allied scientists, he made visits to German industrial plants in Stuttgart, Gersthofen, Munich and Ludwigshafen.

NAIDM Committee Chairmen

Chairmen of committees for 1946 for the National Association of Insecticide & Disinfectant Manufacturers have been announced by N. J. Gothard of Sinclair Refining Co., president, as follows: Executive Committee, A. W. Morrison, Socony-Vacuum Oil Co., New York; Legislative Committee, W. J. Zick, Stanco, Inc., New York; Disinfectant Scientific Committee, Jack C. Varley, Baird & McGuire, Inc., St. Louis; vice-chairman, Dr. G. F. Reddish, Lambert Pharmacal Co., St. Louis; Insecticide Scientific Committee, Dr. Alfred Weed, John Powell & Co., New York; vice-chairman, A. C. Miller, Gulf Research & Development Co., Pittsburgh; Sanitary Specialties Scientific Committee, H. W. Moburg, Rex Re-Young Soap Co., Dayton, O.; vice-chairman, A. C. Pabst, Socony-Vacuum Oil Co., New York; Disinfectant Merchandising Committee, Henry A. Nelson, Chemical Supply Co., Cleveland; vice-chairman, Paul L. Robbins, George B. Robbins Disinfectant Co., Boston; Insecticide Merchandising Committee, H. W. Moburg, Rex Research, Inc., Toledo; Sanitary Specialties Merchandising Committee, Geoffrey H. Wood, G. H. Wood & Co., Toronto; vice-chairman, H. J. Brownstein, Hysan Products Co., Chicago; Chemical Analysis Committee (Disinfectants), A. L. Sodergreen, West Disinfecting Co., Long Island City; Chemical Analysis Committee (Insecticides), George W. Fiero, Stanco, Inc., New York; Public Purchases Committee, W. B. Eddy, Rochester Germicide Co., Rochester, N. Y.; Membership Committee, D. W. Lynch, John Powell & Co., Chicago; Program Committee (June, 1946), C. L. Weirich, C. B. Dolge Co., Westport, Conn.; Sprayer Committee, C. E. Smith, Socony-Vacuum Oil Co., New York.

J. T. Baker Builds New Unit

J. T. Baker Chemical Co., Phillipsburg, N. J., is adding a new manufacturing unit to its plant. Steel work is now in process of erection for a new organic chemicals unit.

GERMAN INSECTICIDES

(Continued from Page 125)

(b). A stocking (Bemberg or cotton) was immersed in the solution of the preparation and allowed to dry. It was then drawn over the arm and the exposure made to the mosquitoes as in (a). Frequently the tests were run without permitting the stocking to dry.

The table on page 125 is illustrative of the data obtained on mosquito repellents at Eberfeld. The various compounds were tested at low concentrations, 5 to 7.5%. Since the corresponding repellent tests made in the United States are conducted using the pure (100%) compounds, it is useless to attempt to make comparisons. The results shown here were obtained using three persons as testers and the individual symbols given were deduced by the writer from each set of three tests. Several other such tables appear in the reports, particularly Report No. 525, covering this field as referred to in the first paper of this series in January.

D. Pharmacological Testing of Insecticides

THE toxicity of insecticides towards animals was determined by inhalation. In order to evaluate "Gix", a three per cent solution i.e. 1.8% 1-trichloro-2,2 bis (p-fluoro phenyl) ethane, was sprayed into a 2500 cubic foot room. By testing with flies it was found that an effect was obtained for two days. Therefore, if the room was sprayed every third day an insect toxic atmosphere would be maintained continuously.

A number of different animals including dogs, cats, rabbits, chickens, pigeons, guinea pigs, rats and mice were placed in the room and observations made daily. The results of this particular test showed that all surviving animals gained weight and exhibited no symptoms. Only the mice showed a great mortality than would be expected. One guinea pig was sacrificed for histological examination. No pathological condition was found. A rat was similarly examined with negative results. It was therefore concluded that "Gix" showed no detachable toxicity under the conditions of the test.

Here again the German testing methods are far less conclusive than those used in this country. The above test relies for dosage solely upon inhalation as contrasted with the measured oral administration method used here. No attempt was reported by the German workers to determine the minimum lethal dosage. It is also of interest that they reported that their best insect repellent, N-chloroethyl-trichloracetamide, was not irritating. This compound however, upon testing in our own laboratory, was shown to be so highly irritating to the skin as to cause blistering.

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An insecticidal product which is also a wetting agent consists of a mixture of saturated hydrocarbon sodium sulfonates, 1-15 per cent of water-immiscible alcohol and 1-20 per cent of water-miscible alcohol. C. O. Henke, to E. I. du Pont de Nemours & Co. U. S. Patent No. 2,366,027.

INDEX TO ADVERTISERS

*For further details see announcement in 1945 SOAP BLUE BOOK

Every effort is made to keep this index free of errors, but no responsibility is assumed for any omissions.

Tale Ends

ROSIN use in soap no longer subject to quota, said the news last months. So if you have rosin, use it. If not, try and get it! Which reminds us of riding past the plant of a well known soaper on the Penna R. R. recently en route to Washington. The stacked drums of rosin would make a soap kettle's mouth water!

* * *

From the manner in which floor wax manufacturers are searching the globe over for waxes, both natural and synthetic, to replace carnauba, science may in time catch up with those who juggle the market down in old Brazil. If a stimulant were needed on research for carnauba substitutes, present cost and marketing methods in Brazil are just that!

* * *

When those 200 small Navy ships really start buzzing around the Philippine Islands picking up copra, the first streak of dawn will begin to show on the horizon of the coconut oil situation,—which everybody hopes is soon.

* * *

Steve Urban who has purchased many millions in chemicals, not excepting glycerine, over the years, completed his first quarter-century with Squibb last month. When requested by this reporter to say a word or two about purchasing today as compared with 25 years ago, his enlightening comment was: "Aw, nuts!"

* * *

From Holland comes a letter from a soap chemist telling something of the five years occupation by the Germans. The letter is from Everhardus Schotte who was a chemist with John T. Stanley Co. in N. Y. some ten or more years ago and who returned to Holland to work for Shell Oil. He is now an instructor in chemistry at a college in Dordrecht, Holland, and an editor of a new Dutch chemical magazine, "Chemische Techniek." During his days in America, he was often a contributor to the pages of *Soap* on technical subjects.